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NATURAL PRODUCTIONS OF BURMAH,
OR
NOTES
ON THE
FAUNA, FLORA, AND MINERALS
OF
THE TENASSERIM PROVINCES,
AND
THE BURMAN EMPIRE.

BY
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P R E F A C E .

This work owes its origin to the wants experienced by a translator of the Bible.

Ever since the day that man was sent to dress the garden of Eden, and to give "names to all cattle, and to the fowl of the air, and to every beast of the field," he has in every age, and in every clime, been a lover of nature. It has been remarked of the Hebrews especially, that "they make such frequent recurrence for metaphorical expressions to natural objects, and particularly to plants and trees, that their poetry may almost be termed the botanical poetry." The Hebrew and Greek Testaments contain between seven and eight hundred names of natural productions, found in the countries where the books were written; and Michaelis says "there are upwards of two hundred and fifty botanical terms." These names, and terms enter into many thousands of verses, THE PROPER RENDERING OF WHICH DEPENDS UPON A CORRECT KNOWLEDGE OF THE THINGS DESIGNATED. And how much more lucid and interesting will appear the Book of God, if these terms be rightly translated!

Throughout the inspired writings of the Ancient Scriptures, and in all the teachings of the Apostles, we find constant allusion to the works of nature. And our Saviour in his parables and similitudes continually draws from the natural scenes of earth which his almighty hand had fashioned, that "the invisible things of Him from the creation of the world might be clearly seen, being understood by the things that are made." But had his hearers been unacquainted with the particular names and properties of the plants or animals to which he referred, they could never have felt as they did, the overwhelming power of his arguments and illustrations. And yet, by some translators, a very considerable propor-

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tion of the botanical, and zoological names that occur in the Bible are unnecessarily transferred! "Not being a zoologist, botanist, or mineralogist," wrote a distinguished translator, "I have not unfrequently, in disposing of technical terms whose meaning I could not satisfactorily settle, gone the whole animal, plant, or mineral, as the case might be, and transferred it."

In this way many words are transferred for which there are good vernacular names, and a native has in his Bible a barbarous word that conveys no idea, while it may be the original designates a flower, that is wafting its fragrance within the lattice where he sits reading. This is no fancy sketch. The camphire of the English Bible, the exquisitely fragrant *Lawsonia inermis*, or henna, is rendered in one Indian version by camphor, and in another the name is transferred, while the shrub itself is growing by the doors of myriads of native houses in both Indias, and for which there are established vernacular names in every Indian language to which I can refer.

Such transfers always cast a deep shadow over the signification of the passage in which they occur, and sometimes wrap it in impenetrable darkness. For instance; Christ says to the Scribes and Pharisees: "Ye pay tithe of mint and anise and cummin, and have omitted the weightier matters of the law, judgment, mercy and faith." Here the antithesis can only be seen by a knowledge of the trifling character of mint, anise, and cummin; yet in two Indian versions every one of these names is transferred, which renders the clause, without a paraphrase, as unintelligible as the English Bible would be with as many Choctaw words in their place. Still, nothing could be more unnecessary, for the readers of the versions are nearly as familiar with mint, anise, and cummin, as the people of Europe, and have as well established names for them in their language.

In two versions, made several thousand miles apart, the translators, transferred the original word for wood-aloes, although the people for whom they wrote were well acquainted with it, and there were good terms in the languages in which they were translating by which to render

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the word, but of both facts the translators were manifestly ignorant.

These examples, which might be easily multiplied, illustrate the advantages which a translator with some knowledge of the natural sciences, possesses in dealing with the Word of God. But the reader asks, "why need he enter scientifically into these studies? Why does he not take the lexicons, and other helps prepared for him?"

Many are the admirers of nature, but let it not be supposed that all are her observing students. The pages of learned men in Europe and America, who have incidentally written upon natural history, prove that they are not.

Rosenmuller is the author of the best work extant on the botany of the Bible, yet his unskillful treatment of the subject sufficiently attests his slight knowledge of the science. His descriptions are usually ill written, and bring before the eye of the reader no definite picture. They are often moreover very defective, giving popular names, as beans and lentils, which are indefinite and applicable to different species and even to different genera, without the systematic names, which alone are determinate and enable a translator to render accurately. Occasionally his statements are erroneous. Of *agallochum* or wood-aloes he says: "There is a species of this tree that grows in the Moluccas, called *garo*, Linnæus has described it as *Exacaria agallocha*." It would perhaps be difficult to find two trees in the whole vegetable kingdom with more opposite properties, than these two species. The Burmese are well acquainted with both. Mr. O'Riley observed correctly that, "Akyau is a very fragrant, and a very scarce wood of high value with the natives." This is *agallochum* or wood-aloes.* The other is a tree that the Burmese call *ta-yau*,† abundant near the sea, the juice of which is said to produce the most intense pain, and often blindness if it enters the eye. From its power to produce blindness the Karens call it the "blind tree;" and the natives are all of them so

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much afraid of it, that I have sometimes found it difficult to induce my boatmen to pull up beneath its shade.

In Carpenter's Natural History of the Bible, a popular English work, reprinted by Abbott in America, a description of the gecko is given worthy of the days of King Arthur. "It is thus described," says the author, "by Cepede: 'Of all the oviparous quadrupeds whose history we are publishing, this is the first that contains a deadly poison. This deadly lizard, which deserves all our attention by his dangerous properties, has some resemblance to the chameleon. The name gecko, imitates the cry of this animal, which is heard especially before rain. It is found in Egypt, India, Amboyna, &c. It inhabits by choice the crannies of half rotten trees, as well as humid places. It is sometimes met with in houses, where it occasions great alarm, and where every exertion is used to destroy it speedily. Bontius states, that its bite is so venomous, that if the part bitten be not cut away or burned, death ensues in a few hours.'"

It is well known in India that the gecko is as harmless as the cricket. I have had them drop from the ceiling upon my naked hand, and hang suspended by the feet from my fingers without the slightest pain or inflammation ensuing.

Stuart on Rev. 21: 18, says: "The bottom row of foundation stones was *jasper*—which is of a green transparent colour, streaked with red veins." Such a definition of jasper I have never been able to find in any work on mineralogy; and Webster, following Dana, defines it: "An opake impure variety of quartz, of red, yellow, and also of some dull colours." The distinctive character of jasper from other minerals that resemble it, is "its opacity." The Greek word as used by the Apostle, undoubtedly designated the stone now called heliotrope or blood-stone—a mineral of a remarkably deep, rich, green; and translucent, but spotted with opake red spots, supposed to be red jasper. There is in it something peculiarly agreeable to the eye above all other precious stones I ever saw, or that probably exist; and were heliotrope inserted in the version; the imagination of ev-

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every reader would picture to himself a foundation for the Heavenly Jerusalem of the pleasantest stone for the eye to gaze upon, that earth can produce.

Murray, in his Encyclopedia of Geography, the first work of its class, says: "To the fig tribe belongs the famous banyan of India, commonly called peepul tree, and constantly planted about Hindoo temples (*Ficus religiosa*.)" But the famous banyan is not commonly called peepul, but bir; and the peepul is not the banyan, and the tree which is usually planted about Hindu temples is not the banyan, but the peepul, and the banyan is not *Ficus religiosa*, but *Ficus indicus*. Again, he remarks: "Far superior to this [the cocoa] in the magnitude of its leaves, of which a single one will shelter twelve men, is the palmyra palm (*Borassus flabelliformis*,) which sometimes attains to one hundred feet, while its trunk yields abundantly toddy or palm wine."

It is true the palmyra produces toddy, not however from the trunk, but from the spathes that bear the flowers and fruit, but the leaf of the palmyra is not much larger than a large cabbage leaf, and the reference to the leaf should have been to the great fan palm of Ceylon, *Corypha umbraculifera*, a palm not of the same genus with the palmyra.

In a little work published by the American Tract Society, it is written: "In some hot countries where water is scarce, travellers obtain a supply from the palm tree;" and the statement is illustrated by a very good representation of the common plantain tree, with a fine stream of water gushing from an incision that has been made in the trunk!

The writer had probably some confused ideas of the palm producing toddy, or the traveller's tree, handsome *urania*, which produces water when a leaf is broken off; or of the water-vine, *phytocrene*, an immense creeper that grows on our thirsty mountain sides, which when discovered discharges a large quantity of water, that is a most grateful beverage in a hot day, when far above the streams of the vallies.

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In one of the elaborate volumes of the United States Exploring Expedition it is said : "In its wild state the peacock is peculiar to Hindustan ;" while they are roving wild all over these Provinces, Arracan, and the Burman Empire. Webster defines dammer as " a resinous substance, obtained from a species of agathis or dammara, a tree allied to the pines," while here it is obtained from the wood-oil tree family ;* and a considerable proportion of what Europeans often call dammer, is a hard kind of bees' wax, produced by a bee that builds in hollow trees.†

With teachers like these Europeans and Americans come to India, and find themselves in the midst of a fauna and flora with which they are utterly unacquainted. In sections where there are lexicons that define correctly the vernacular names, the difficulty is scarcely felt. In Wilson's Sanscrit Dictionary, for instance, the systematic name of nearly every plant and animal known to the language, can be found at once ; but if, as in Farther India, the lexicographers are as much in the dark as the inquirer who consults them, he has no alternative but to remain in darkness, or sit down to the patient study of the objects themselves. And to this toil the translator of the Scriptures must address himself, for it is not optional with him, but is a part of his professional duty to render, if possible, every word of the original by its corresponding word in the vernacular, and he is so far wanting in the trust committed to him by the churches or societies whose ambassador he is, if he shrinks from any study requisite to qualify him for the accurate performance of his work.

In ordinary circumstances, the professional duties of most men preclude them from bestowing the time and attention to the natural sciences, necessary to enable them to determine accurately the character of the objects of nature with which they are unacquainted. It is not remarkable then that our Chin-Indian literature abounds in errors. Throughout India, wherever there is European society, there is found a numerous class of English names incorrectly applied to Indian productions, which almost unavoid-

* အင်ထွဲ

† ပွရက်

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ably lead the translator, or author astray, when unable to make a scientific examination for himself. On this Coast, for instance, it has passed from conversation to books, published within the last ten years, that turmeric is saffron; the flower of the thorn-apple, the trumpet flower; the tamarind tree, the tamarisk, and its timber, iron wood; the ebony tree is the cabbage tree of one author, and the fig tree of another; while ebony not being supposed to exist, though abundant throughout the Provinces, is defined "a kind of a tree." The fennel flower is "a kind of rice;" nettles, "a kind of thorn;" sweet flag, sugar cane; and the date tree is the palmyra palm. Mica is talc; serpentine, jasper; the carnelian, a garnet or ruby; gamboge, realgar the red sulphuret of arsenic; natron, the carbonate of soda, is saltpetre the nitrate of potash; and antimony is bismuth, according to one authority, and James' powder, according to another. The porcupine is a hedge-hog; the hedge-hog, a pangolin; the shrew-mouse a musk-rat; the sand-badger or arctonix, a hyena; barking deer, porcine deer; the monitor, a guana; and the blood-sucker, a chameleon. The adjutant is a gull; the eagle, a swan; the hornbill, a crane; the sun-bird, a skylark; and the grey heron, a water-hen.

In a work translated from the Burmese into English, and printed at the expense of Government, the Burmese name of the common wild ox, *Bos sondaicus*, is translated bison; the sambur, or rusa deer, is elk; barking deer, spotted deer; the eagle is an adjutant; cranes are called *cyrusses*; sun-birds, *hnan-sok*; a coluber is translated a *leng* snake; a crocodile, an alligator; the toad, "a rough frog;" tin in one place is lead; and pewter, or a mixed metal resembling it, is translated "white copper;" the Bengal quince is rendered *oksheet*; one species of millet, *sap*; another species of millet, barley; barley is translated *mayaw*, in one place, and *mace* in another; arum is "*ping* (root)," a species of yam, *thadæ*; and the corypha palm, the palmyra palm.

This last error may be supposed to be of little consequence, and yet through it, the whole paragraph in which it occurs becomes false; and illustrates a precisely opposite

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argument from that for which it is brought. The author is made to say : " As regards the inheritance like a palmyra tree ; it is the nature of this tree not to grow from cuttings or shoots ; having lived its time, it flowers and bears fruit ; when the fruit has fallen off, the parent tree dies ; after its death, each fruit becomes a tree and continues the family. Whilst the tree was alive, no other tree could be produced ; so only on the death of their parents do children inherit." The palmyra tree produces its fruit annually, as regularly as the apple tree, and young trees may be raised from it as easily as from apple seeds, while the parent tree is still living ; so if the comparison prove any thing, it proves that children may inherit before the death of the parent, just the converse of that for which the comparison was made. Let, however, the original word be correctly translated, and no simile can be more striking, and appropriate. A corypha palm after it has borne fruit, lifts its blackened leafless head above all the other trees of the forest, like the dead father of the woods struck by lightning.

Where two or more systematic names are attached to an article in this work, they are, unless the contrary be indicated, the different names by which the same object is designated by different writers. In zoology these synonyms have been selected principally from articles published in the Journal of the Asiatic Society, by Dr. Cantor and Mr. Blyth. In botany the first name is the one under which the article will be found in Voigt's Catalogue, if in that work, and in other modern writers ; while the second is the Linnæan name, or the one by which it was described by Roxburgh and by other authors of the old school.

The utility of these synonyms will be best understood by an example. Gesenius, Rosenmuller, Harris, and other Biblical writers, tell their readers that *copher* designates *Lawsonia inermis* ; and Dr. Wight in his Illustrations of Indian Botany, gives a handsome coloured figure of *Lawsonia alba*. To a person not read in botany these will be regarded as different species, but on turning to my

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article, the reader will learn at a glance, that they are different names given by different writers to the same plant. Thus it will be seen that our common barking deer lies scattered over the pages of natural history under twelve different names, and without the synonymes it might be taken for twelve different species. In like manner, when objects have several native names, as they often have, I give all that I have heard.

Still the investigator will not always obtain at once the object he seeks from the native name; and this is a difficulty which no author can obviate, as it exists in the language. Different objects sometimes have the same name, as for instance, the goat-sucker and the snipe. The Burmese call both *myc-wote*,* from their habit of dwelling on the earth. Sometimes a slight distinction is supposed to exist between different things, which is not always observed. The Amherstia and the Jonesia are both *athauka* trees, but the Amherstia is regarded as the female, and the Jonesia as the male tree, which is therefore denominated *athauka-pho*.† So the male of the *fagraea*, is the *gordonia*, or *anan-pho*.‡ The same object is often known by different names. Our knowledge of the existence of platina in Burmah was first furnished by Mr. Lane, who said the Burmese called it *sheen-than*, but in his Dictionary he defines it *shwe-phu*,§ or white gold. Some persons make distinctions which others neglect. The water-lily and the nelumbium are both call *kya* || or the *kya* is restricted to the water-lilies, and the nelumbium called *pa-dung-ma*.¶ Add to which, for many obscure species in every department of the natural kingdom, the natives have no definite names, on which they can agree among themselves.

* မြဝတီ

† အသောက်ဖိုဝ်

‡ အနုပိတ် and not အနုပ as printed by mistake on page 70.

§ ရွှေ

|| ကျာ

¶ ပဒုဋ္ဌာ

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The local names used in Tavoy and Arracan are given where known ; the latter on the authority of Capt. Phayre ; from whom also were first derived some of the Burmese names for birds, and the smaller mammalia. It is only within the last two years that the proper Burman name for eagle has found its way into books, though it was communicated first by Capt. Phayre, some eight or ten years ago.

The present work does not explain mere technicalities for the naturalist, but brings to light in the department in which it enters, a host of common English words that have hitherto been left, in this country, like useless lumber in the shade. To illustrate this position, take a single example from the ichthyology, in which for the first time the correct native names are furnished of the following fish known to English readers : River perch, cockup, band fish, umber or sea perch, Indian whiting, mullet,* mango-fish, climbing perch, snake-head, ophidian, long-snout, doree, pomphret, ribband-fish, goby, carp, barbel, gudgeon, bream, white fish, loach, flat-bellied herring, thryssa-anchovy, bristle-finned sprat, fresh-water herring, flying-fish, gar-fish, half-billed gar-fish, plagusia-sole, brachirus-turbot, adipose cat-fish, short-headed cat-fish, eight barbuled cat-fish, long-finned cat-fish, two barbuled cat-fish, fork-tailed cat-fish, barbuleless cat-fish, plotosus cat-fish, clarias cat-fish, long-headed cat-fish, hammer-headed shark, saw-fish, scate or ray, sea-porcupine, or square fish, fishing frog, common eel, serpent-hearted eel, and conger eel.

Still no pretensions are made in this work to completeness. It is not a book composed in the luxury of literary leisure, but a collection of notes which I have been making during the twenty years of my residence in this country, in the corners of my time that would otherwise have been wasted. Often to forget my weariness when travelling, where it has been necessary to bivouac in the jungles ; while the Karens have been seeking fuel for their night fires, or angling for their suppers in the streams, I have occu-

*There are three species of mullet with three distinct native names, one of which has been correctly defined before.

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pied myself with analyzing the flowers that were blooming around my couch, or examining the fish that were caught ; or an occasional reptile, insect, or bird that attracted my attention. Such occupations have brightened many a solitary hour ; and often has the most unpromising situation, proved most fruitful in interest ; for “ the barren heath, with its mosses, lichens, and insects, its stunted shrubs and pale flowers, becomes a paradise under the eye of observation ; and to the genuine thinker, the sandy beach and the arid wild are full of wonders.”

Without books and without means to convey away specimens, my plan was to note down just such characteristics in the objects that I observed, as secured most of my attention ; but when I came to compare my notes with descriptions in books, they would often be found to contain insufficient data to determine the species, and sometimes even the genus, but perhaps enough for the tribe or family. In botany this was necessarily not unusual, because I frequently met with a plant in flower without the fruit, or in fruit without the flower ; where both flower and fruit were necessary to determine the genus. Often again, never contemplating publication, when I had no use for the article in translation, and no object in being precise, I was content, as with fish for instance, to satisfy myself that it was a cat-fish, a member of the carp family, or an eel as the case might be, without making observations which would enable me to distinguish the species.

These notes would probably have remained in manuscript, as they have done for many years, had it not been for the liberal patronage of our Commissioner Major Bogle, and a few other kind friends who interested themselves in their publication ; the former subscribing for fifty copies, and the latter for proportionately large numbers.

Future investigation will supply many deficiencies, and correct many errors that are inseparable from a first attempt like the present, which involves the observation of so many objects, in so many different departments of natural science, and their names in so many languages. Still, it is confidently believed, that no one can longer say of Farther India, as does Murray in his Encyclopedia

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of Geography : "There are no materials on which we can attempt a botanical, or geological delineation of this territory. The zoology also of these immense and luxuriant regions is scarcely known."

It will therefore be seen that a work of this kind was demanded, and I trust it will commend itself not only to the Biblical student, but to authors in the vernacular languages, especially to such as shall hereafter prepare native works on natural history. It will also be serviceable to those who translate from the Burmese or Karen into English, and to all natives who read English, and particularly to every one who desires to write on these Provinces either in India, England, or America.

Such is my reply to those "machines for eating and drinking, digging and working, hoarding and spending," who ask : "WHAT'S THE USE OF IT ? They cannot well see the use of studying the stars, observing the stratification of rocks, or being curious about shells, minerals, and plants, birds, beasts and insects."

INTRODUCTION.

NATURAL SCENERY.

—“ Fern, flowers, and grasses creep,
Fantastically tangled : the green paths
Are clothed with early blossoms, through the grass
The quick eyed lizard rustles, and the bills
Of summer birds sing welcome as ye pass ;
Flowers fresh in hue, and many in their class,
Implore the pausing step, and with their dyes,
Dance in the soft breeze in a fairy mass ;
At every door the odorous jasmynes rise.

Kissed by the breath of heaven, seem fragrant from the skies.”—Byron.

“ It is a beautiful country,” wrote one of our Bengal visitors : “ here, there are views and patches of scenery, green fields and green lanes that lead back the mind to one’s own loved land.” No contrast can be more striking than the scenery of the Salwen, and that of the Hoogly, the last often that the eye rests upon before reaching this coast. The interminable level plains of Bengal, without the semblance of a hill for hundreds of miles, are changed for mountains and valleys, cloud-capped crags, and frowning precipices ; and green fields with immense grotesque masses of mural limestone starting up in their midst, like the gigantic spectres of an antediluvian world.—The dull-est of all landscapes is exchanged for the most sublime and picturesque.

“ It is a beautiful land” when seen on the coast, but it is still more beautiful when seen amid its mountain streams ; streams that cannot be surpassed in romantic beauty, even in the annals of poetry itself. In some places they are seen leaping in cascades over precipices from fifty to one hundred feet high ; in others, spreading out into deep, quiet lakes. In some places, they run purling over pebbles of milk-white quartz, or grass-green prase, or yellow jasper, or sky-blue slate, or variegated porphyry ; in others, they glide like arrows over rounded masses of granite, or smooth angular pieces of green stone. In some places, nought can be heard but the stunning sounds of “ deep calling unto deep ;” in others, the mind is led to musing by the quiet murmur of the brook, that falls upon

the ear, like distant music. The traveller's path often leads up the middle of one of these streams, and every turn, like a turn in the kaleidoscope, reveals something new and pleasing to the eye. Here, a daisy-like flower nods over the margin, as if to look at her modest face in the reflecting waters ; there, the lotus-leaved wild arum stands knee deep in water, shaking around with the motion of the stream, the dew drops on its peltate bosom, like drops of glittering quicksilver. Here, the bare fantastic rocts of a willow, sprinkled with its woolly capsules, come down to the water's edge, or it may be an eugenia tree, with its fragrant white corymbs, or a water dillenia, with its brick-red scaly trunk, and green, apple-like fruit, occupies its place ; there, the long drooping red tassels of the barringtonia hang far over the bank, dropping its blossoms on the water, food for numerous members of the Carp family congregated below. On the islets are seen a dwarf species of wild fig, and the bare rocks on which vegetation has not yet squatted are often the watch-tower of the king-fisher, with her wings of blue, and breast of red. Now we come on a little patch of impenetrable reeds, a Mississippian cane brake in miniature ; and anon the pink corymbs of a shrubby species of *Ixora* looks down upon us from a steep bank. In place of the reed, we have sometimes a thicket of the curious half-anthered *Phrynium*, and instead of the *Ixora*, we have often large clusters of a fragrant clerodendron, of which our forests produce three or four different species. Often the waters breathe the odor of the lily from the water Crinums that float their large blossoms on the surface, while on the margin, the glowing red flowers of the amonum peep up from the base of their green stems ; or a creeping species of acacia entwines its globular scentless flowers with the fragrant one sided spikes of the *Hopea*, high in the lofty tree tops. Here an ebony tree droops beneath the weight of its persimmon-like fruit, and there a gamboge tree lifts its graceful head, with its delicate little mangosteens in miniature ; or the large creeping oleaster swings from the forest tree to which it clings its rich bunches of sour scarlet plums.

Some pages in our natural scenery are quite unique. Take one for illustration, that is constantly open before the face of Maulmain.

THE NATURAL FORTRESS OF DÔNGYANG.

On looking abroad from the pagoda hills of Maulmain, an unbroken range of primitive mountains, four or five thousand feet high, are seen on the margin of the eastern horizon, sweeping around to the north west like an amphitheatre, where they are lost in the misty distance. From Martaban Point another range extends directly north, parallel with the west bank of the Salwen. In the space between these mountains, bounded by the Salwen river on the west, and the Gyaing on the south and east, is an immense alluvial plain, resembling the prairie-lands of Illinois and Missouri. In the midst of this plain, twenty miles north of Maulmain, and six or eight east of the Salwen, the attention of the spectator is arrested by a pile of the most picturesque mountain limestone that ever adorned a landscape. Rising abruptly, in the most fantastic shapes, from the level of tide-water to nodding precipices two thousand feet high at a single leap, they seem to shake their hoary-lichen faces and fern-fringed foreheads at the passing traveller, and threaten him with instant destruction. The whole range is not more than eight miles long, and at twenty miles distance its numerous grotesque peaks give it no very dissimilar resemblance to a Gothic cathedral; and the illusion is made the more real by the spire of a small white pagoda being distinguished with some difficulty in the distance, on the very topmost summit of the highest point of the range, and on the margin of an abrupt precipice.

On a near approach the range loses the continuous appearance which it possesses in the distance, and assumes an undulating aspect, like the waves of an angry ocean. A precipice, near two thousand feet high on the north west extremity, sinks to the south east to within a short distance from the ground, then rises abruptly again to nearly its former height, presenting an unbroken precipitous front for three or four miles. In one place the precipice is not more than five or six hundred feet high, and at this spot a cool crystal stream, several yards wide, and two or three feet deep, gushes out of a purple grot at the base. A writer in the Maulmain Chronicle, describing this stream several years ago, remarked, "It was in the hottest part of the year that I went to the spot, accompanied by several Karens.

The heat at the time was truly oppressive until we came within thirty or forty rods of the mountain, when the temperature very sensibly changed, and a delightfully cool current of air was felt setting from the mountain. As we advanced, we saw quite a large stream of water issuing from a cavity in the perpendicular rocks which rose above us to a great height. This stream was clear as crystal and cold as ice water. The temperature of the air here forcibly reminded me of a cool October day at home. On examination, I found the cold air proceeded from a variety of air holes on the side of the mountain. It was a luxury to see so clear a stream of water after having for a long time seen only the muddy waters of the river. It was a luxury to taste water which so exactly resembled the cold wells at home. It was also a luxury to find a little spot in the hottest season and the hottest part of the day, which defied the scorching rays of a vertical sun, and made one fancy that he had been transported to his own climate and was breathing his own pure air."

This writer's emotions would have chastened had he known that that stream, "clear as crystal and cold as ice water," had been the theatre of more agonizing scenes than the muddiest and hottest stream in the Provinces; scenes that had won for it the name of "**TEEYANG**"—*the Brook of Weeping*.

With some difficulty a man may enter the cave and follow up the stream a few yards, but the only path is the bed of the brook, and the glittering stalactites hang so low from the roof that a passage is not easy. A more interesting scene awaits the lover of nature without. Immediately above the mouth of this cave and stream the rocks rise as abruptly as in any other locality, but the limestone has been worn by the waters of ages unequally, and many masses of rock have been detached from its face and fallen to the base, leaving numerous jutting prominences, some of which are loosely held by the arms of the parasitical *Ficus*, whose roots find a passage into every crevice, and often bind together the broken fragments. With a steady head, and with fingers and toes accustomed to climbing, a person, by pursuing a zigzag course, may reach the summit at this point. The fallen rocks piled up from the base, afford a very practicable flight of steps above the highest tops of the gorgeous red-flowered Coral trees, that throw their shadows

over the mouth of the cave, and crowd the banks of the brook. Above, the precipice has a slight declination, and a rough, uneven surface, so that naked feet and hands with care may ascend it to a narrow ledge, and this ledge, though in some places less than the width of a man's foot, serves as a path to a natural parapet, in which one armed man might conceal himself and defend the ascent against an army. By a path with like various alternations the margin of the summit is reached, where a full view of the region below is spread out before the eye of the spectator. At the base of the western mountains the Salwen is seen plunging down its mighty waters to Martaban and Maulmain, where they are joined by the Gyaing, that bounds the prospect on the south and east; while little islands of forest trees, each concealing beneath its shade a quiet hamlet, dimple the whole plain; and babbling brooks thread their wandering ways like veins of silver, or mark the courses of their hidden waters by the emerald hue of their banks.

Turning from the prospect below, and climbing upward on men's shoulders, a gap in the rocks above is reached; then descending a few yards, the spectator is astonished to find himself on the edge of a large basin, like the crater of an extinct volcano. Around, and beyond, on the opposite side of the gulph, for miles in extent, dark precipitous crags, of every imaginable and unimaginable form, fling down their tall shadows a thousand feet about the place of entrance, enclosing an area of several square miles.

"It was a tranquil spot, that seemed to smile:
Even in the lap of horror; ficus clasped
The fissured stones with its entwining feet.
And did embower with leaves for ever green,
And berries dark the smooth and cup-like space
Of its inviolated floor—'tis the haunt
Of every gentle wind whose breath can teach
The wilds to love tranquility."

Down a steep descent of one or two hundred feet, an uneven plain is reached, covered with a luxuriant forest. This impregnable natural fortress has been a place of refuge for the Karens during many generations. While the Burmans, the Siamese, and Talaings, were contending in the plains below, the Karens, in this eyrie home, peeped out on the belligerents from behind their battlements in perfect security;

for besides the place where I ascended, there is only one other possible place of ascent, and that still more difficult, so that half a dozen men could always defend it from any force that could be brought against it. The Karen guide said that none but Karens had ever before ascended the precipice, or entered within its precincts. Indeed, that there was here one of the largest, strongest, and most remarkable castles that nature ever built, had never been imagined. Its chief weakness is the lack of water, yet it is far from being wholly destitute of that. About a mile from the entrance, a gradual ascent of an hundred feet leads to the summit of a precipitous glen, and on descending it about two hundred feet by natural steps in the craggy rocks, a small stream of water is seen gushing from the face of a precipice, which the guide said he thought resembled the rock struck by Moses in the Arabian desert. This affords a never failing supply of several quarts, and sometimes gallons of pure water, every hour in the year; but as this is the only spring as yet discovered, the place does not afford a sufficient supply for a large body of people. The arts of civilization could, however, overcome this difficulty by sinking a shaft to the subterranean brook that flows out beneath.

In the days of the Burman emperor Alompra, before his successes in these provinces, a large number of Karens were besieged here by the Siamese, and tradition says that nearly the whole perished for the want of food and water. From the sufferings of that period, or a previous one, the place has acquired the name of "DŌNGYANG"—*the Weeping City*.

The whole range is named "*Zwa-kabin*,"—*the Mooring of the Ship*, from a tradition, which says that in ancient times the whole world was covered with water, and the only survivors of the human race were in a ship which floated hither, where the highest point of the range, being above water, the ship was moored to it.

Since the reign of Alompra, the Karens seem to have made special efforts to plant fruit trees in this their last refuge from an invading army. Jack, and mango trees abound, and pine apples are numerous. The opposite-leaved mango which bears a fruit like a plum, the Heritiera, whose agreeable sub-acid fruit is borne in bunches like large grapes, and the edible *Zaïsooa*, with its bunches of red echinated fruit, are also com-

mon, and a few trees are seen of the Indian *Sandoricum*, which bears a fruit valued by the natives, as large as an apple, but internally more like a mangosteen, and is often called by Europeans the wild mangosteen. The Karens have also been mindful to make provision for their betel, an article regarded by them almost as essential as food. There are two species of areca-nuts, and the piper betel-vine is scattered every where.

They have also provided materials for mats, having planted in large quantities a species of *Pandanus*, screw-pine, the leaves of which are used to make mats throughout the Provinces. Nor is the place destitute of large timber trees, apparently indigenous. There are one or two species of acacia, Boodh's cocoanut, and two species of Wood-oil trees, one of which produces the oil from which torches are manufactured. Ratans are indigenous and abundant, and there are numerous little forests of the gigantic bamboo, the largest species known, and peculiar to this country. Here too is game for the sportsman, and meat for the hunter. In short, Dōngyang is the most delightful place for an anchorite that ever was formed, and one can scarcely visit it without wishing himself a dervise or a monk.

During the rains the whole plain is under water, excepting a small sprinkling of islands on which the villages are located; and boats can sail from Maulmain to the very foot of the precipice; and as if formed by some genii-architect for the purpose of seclusion and defence, this castellated pile, though forming to the eye in the distance a part of a continuous range, is really for all purposes of access quite isolated. On the north, as adverted to above, it is connected by a low ledge to the north-west portion of the range, and on the south and east a long narrow ravine is interposed between it and the southern section, through which a path is trodden by the Karens to the villages beyond the mountains.

Its form appears to the eye nearly like that of an equilateral triangle, with its sides about two miles long; and on a chart that was made by Lieut. Nalloth, of the Childers, that surveyed this part of the country seven or eight years ago, the base of this site is represented as of a triangular shape, with sides of from two to three miles long, but the whole space inclosed, is there depicted as a vast succession of limestone peaks.

SIAM HILL.

There is some magnificent scenery in the Southern Provinces.

Tavoy stands in an alluvial bottom, and is hidden in the distance by the tall palms, and glossy-green jacks, and yellow-flowered cassias, and twenty other flowering trees unknown to song, which overshadow its humble dwellings; but Siam Hill is a conspicuous knoll, a hundred feet high, six miles long by half a mile wide, in the paddy fields half a mile east of Tavoy.

Here, after emerging from the shrubbery that obstructs the view, there suddenly opens out before the spectator a prospect of indescribable beauty, "like a sleeping child too blessed to wake." At his feet lie spread out the level paddy fields, divided into numerous one-acre lots by little mounds raised around them to retain the water, so as to suggest a gigantic chess board. On the south a silver stream, fringed with the dark foliage of wild fig trees, and the thick straggling bushes of a species of Hibiscus, covered with large yellow and red flowers, is seen pursuing its tortuous course beneath the shadows of Mount Burney, which rises twelve hundred feet above its southern bank. On the east, "hills peep o'er hills," like the seats of a vast amphitheatre, bounded by Ox's Hump, rising in a most picturesque outline four thousand feet above the plains. Yonder, at the distance of fourteen miles, is seen a foaming cascade making a fearful leap from a gorge half way up the highest mountains. Green forests are diversified with white lichen-covered precipices, while here and there a whitened pagoda lifts its conical head above the summit of an isolated hill, or the smoke of a solitary hamlet is seen curling up in the midst of Wood-oil tree forests or Liquid maber groves.

"The Palm-tree waveth high,
And fair the Betel springs;
And, to the Indian maid,
The Bulbul sweetly sings.
But I dinna see the broom
Wi' its tassels on the lea,
Nor hear the Lintie's sang,
O' my ain countrie!"

GEOLOGY.

Crawford collected, and Buckland examined, a series of geological specimens of every rock seen from the delta of the Irrawaddy to the mountains north of Sagaing ; from which it appears that the Tertiary formation rests upon the transition, or mountain limestone, and the intervening coal measures of Europe are wanting. So far as the geology of these provinces is known, there is an exact correspondence on this point. We have Alluvium, Diluvium, Tertiary, transition or mountain limestone, the Grauwacke formation, and Primitive, as in Burmah ; and to complete the correspondence, we have a calcareous sandstone, which appears to be of the same age with a sandstone, that Prof. Buckland referred with doubt to the New Red Sandstone formation.

UNSTRATIFIED ROCKS.

GRANITE.

We step on shore at Amherst on granite, we meet with it on Double Island, Callagouk, and the islands opposite Yay, and from the mouth of Yay river to Tavoy Point the coast is one unbroken chain of granite. Beyond the Point this rock again appears, but is lost on the main land below the mouth of Pai river. There is also granite on King's Island, and probably on some of the islands north of it. This granite wherever I have observed it, is composed of quartz, mica, and felspar, the latter usually white ; and sometimes in crystals an inch long, constituting porphyritic granite.

On traversing the provinces in the latitude of Tavoy, another granite range is seen about fifteen miles east of Tavoy river, which rises in some places two or three thousand feet high, and which I have traced in a S. S. E. direction to the vicinity of Mergui, and to the N. N. W. beyond the Burman villages, where granite appears crossing the river. This, however, is rarely, if ever, porphyritic, but the crystals of mica are often of considerable size, and the felspar frequently soft,

and decaying. It is in this range that the tin of Tavoy province is chief found.

The dangerous reef called the 'Cows,' near where Tavoy river disembogues itself, is formed of porphyritic granite, containing large crystals of flesh-colored felspar. This variety has acquired the local name of

နွားကျောက်၊	<i>Nwa-gyouk.</i>
သားခါးခဲ.	လုံဇာနည်.

It is probably so called from its resemblance to the color of a red cow ; but tradition says that these rocks were originally a drove of cows which opposed Boodhism, and attempted to cross the river to beat down the pagoda opposite, on Tavoy Point, but the divinity looking out from the pagoda exclaimed, "Those are not cows, they are rocks;" when they were all immediately changed to stone.

It is a curious fact that while these ledges, which are constantly exposed to the water and the weather, are remarkable for their hardness, rocks of the same composition, at a locality not a mile distant on the shore, are in a complete state of disintegration, so that the crystals composing them may be picked out by the fingers. This fact tends to show that the disintegration of granite, is attributable to other causes than exposure to the weather.

Passing still farther east and down the Tenasserim, in about latitude 13° 40', the river runs over a broad belt of granite, which has the same general features as the preceding. This is the most eastern granite that I have met with in the province.

On proceeding up the river from Amherst to the headwaters of the Dahgyaing, no indication of granite occurs from Amherst Point to the base of the eastern mountains, where granite boulders appear in the brooks. This granite contains numerous crystals, of schorl but is apparently destitute of tin ; for it is not known that tin has ever been worked in Amherst province.

Mr. Lonsdale, the editor of the Maulmain Chronicle, says, "Granite is to be seen in abundance on the crest of that high range of mountains which runs nearly parallel with the Thoung-yin river, on the Shan or right bank. In the creeks,

which take their rise in those mountains, and feed the Thounghin, it is to be found in a highly decomposed state."

ကျောက်ခွက်တတ်။ *kyouk-hnan-bat.*

GRANITE VEINS.

In a sandstone hill near Mergui is a vein of granite, three feet thick, as described by Captain Tremenheere, which is a great repository of tin. Granite veins are seen in granite near Tavoy point; and there is a narrow vein of granite on the summit of the mountain range, that bounds the valley of Tavoy river on its east side. At Amherst, granite veins are numerous, mixed with greenstone dykes.

SYENITE.

Referring to the mountainous range in the north-east part of Amherst Province, Dr. Helfer says, "In some parts occurs syenite, and only in one place granite." I have seen no syenite in the provinces, yet it may possibly exist in those mountains, though not probable. Granite boulders with schorl, that I collected at the base of those mountains, have been sometimes erroneously termed syenite.

GREENSTONE.

At Amherst point the rocks are principally greenstone, with veins of granite and quartz. It has never been analyzed, but its mineral contents are manifestly different from the common greenstone of Europe and America. It has no indications of felspar, but contains considerable silex. It probably consists of hornblende, and quartz. Mr. Crawford enumerates all the other rocks at Amherst correctly, but does not mention greenstone. He has quartz rock in his list, in which he may have included the greenstone.

GREENSTONE SLATE.

Greenstone slate, or diorite slate, forms large dykes in all the three belts of granite in the southern Provinces. Baron des Granges, to whom I submitted specimens, said that the greenstone slate in the granite range nearest the sea was composed of "flint (silicum) and hornblende." The quantity of hornblende must however be small, for it has the appearance of a silicious rock. It is very hard, but has often a trap-

pous structure, falling into angular pieces. To this rock we are indebted for nearly all our cascades. It often forms precipices, over which the mountain streams leap, and foam with great beauty. Katay river descends several hundred feet over a succession of these precipices; and on the east side of the mountains, nearly in the latitude of Tavoy, is the finest fall I have seen in the provinces. At this place Hidu river falls into a chasm some seventy feet deep, with banks for several hundred yards, as high and precipitous as the wall over which the stream plunges.

IGNEOUS DYKES.

Igneous dykes are not uncommon, but they bear very little resemblance in their mineral contents to the ordinary trap rocks of Europe and America. Some resemble quartz rock, others appear like altered rocks, and many look like sandstone, which has been subjected to the action of fire. That they have been ejected in a soft state is clear from their sides, which in some places abound with hemispherical cavities, into which the soft shales have been pressed, and their pressure probably produced the cavities. The shales are sometimes seen pressed upwards many degrees on the upper side of the dyke.

A remarkable dyke is seen in the upper part of the Tenasserim river. It runs like a wall nearly half way across the stream, and is called by the natives the "Giant's dam." It is about twenty feet high above the water, five or six feet thick, with perfect parallel sides, and is inclined some ten or fifteen degrees from a perpendicular. It is a silicious rock, with no traces of hornblende in its composition.

Some of these igneous rocks appear in hand-specimens to resemble grauwacke; and they have been confidently pronounced to be grauwacke, but when viewed in connection with other rocks in situ, their igneous origin is quite apparent.

CLAYSTONE PORPHYRY.

Among the slates and sandstones of Tavoy, claystone porphyry is often seen, but I have never met with it at Maulmain, nor any where in Province Amherst. Excepting the mural masses of limestone, that province is an immense flat east-

ward from Maulmain up to the base of the granite mountains, from which the Gyaing descends, except a low range or two of sandstone and clay slate ridges.

Tavoy, on the contrary, from Siam hill on its eastern suburb, has precisely the opposite feature of being a continuous succession of hills and valleys up to the granite mountains. It is an interesting fact that this great difference in the natural scenery of the two provinces is almost wholly owing to the presence or absence of claystone porphyry. At Tavoy, most of the picturesque little hills are formed of claystone porphyry, and were those hills melted down again into the bowels of the earth, whence they probably came in a melted state, Tavoy would offer nearly the same natural features to the eye that Maulmain now does, excepting that one of the clay slate ridges is a little higher than those at Maulmain.

There is a conglomerate on the islands opposite to Palaw, and in several places on the banks of the Tenasserim, which seems like claystone porphyry studded with fragments of other rocks. It is sometimes a breccia, the fragments being angular bits of slate apparently of the beds below. This is most usually the character of the rock on the Tenasserim; but on the islands opposite Palaw, rounded pebbles are most numerous. In both localities the paste in which the fragments are imbedded, forms the largest proportion of the rocks.

STRATIFIED ROCKS.

It is worthy of remark that, beginning at Mergui, the line of stratification gradually turns to the west on proceeding north, like the line of the coast. At Mergui the strike of the strata is about two points east of north and west of south; at Tavoy it is two or three points west of north and east of south; at Maulmain three or four, and up the Dahgyaing five or six.

GNEISS.

I have seen no well marked gneiss in the provinces, but the granite is in some places gneissoid.

ကျောက်နီဘတ်—*Kyouk-hnan-bat*.

QUARTZ ROCK.

Specimens of what most geologists have characterized as greenstone, or greenstone slate, Dr. McClelland called "grey

quartz rock ;" and where it appears in strata passing into indurated clayslate, it is nearly all silex.

CLAY SLATE.

Clay slate is usually the first stratified rock that rests on the granite. In the province of Tavoy it is indurated in some places so as to lose its slaty structure, and is a fine compact rock, resembling blue limestone.

MICA SLATE.

Mica slate is seen at Amherst resting on the clay slate ; and at Palaw, where the beds are much contorted, characteristic of this rock, no clay slate was observed between it and the granite ; but the point of contact was not seen. East of Tavoy, thin beds of clay slate and mica slate alternate near the granite.

PUDDINGSTONE.

On the banks of the Tenasserim, near the eastern base of the mountains, in about latitude $13^{\circ} 50'$ are immense masses of puddingstone, consisting of water-worn boulders from a few inches to a foot in diameter, firmly united together ; and forming what is often called transition puddingstone.

ကျောက်ခုံး—*Kyouk-phōng*.

SANDSTONE.

Sandstone most frequently appears next above the primitive slates, and then alternates with clayslate several times before the limestone appears. In one place, however, a few miles south of Toung-byouk river, red sandstone is seen resting on the granite, no slate being present.

When the stone contains red ochre, as on Siam hill near Tavoy, the Burmese call it

ကျွန်းနီ—*Kwe-nee*.

LATERITE.

Laterite is seen lying above the slate at Amherst, and is spread over the sea-coast nearly down to Yay, when the granite appears again, and so far as my observation extends, it is seen no more on the sea-board. In the interior of the southern provinces some portion of the sandstone beds partake of the laterite character ; but it is not developed there as in Ar-

herst province. After leaving Amherst point, laterite appears at Maulmain alternating with sandstone, and it is seen distinctly stratified at the base of the eastern mountains, at the head of the Dahgyaing.

This rock seems to be peculiarly Indian. Its name even is not found in European and American works on geology. When not exposed to the weather it has the appearance of a porous iron clay, sometimes including fragments of other rocks; and from its quality of hardening when exposed to the atmosphere, it has been used extensively for bricks for pagodas and other purposes, and has hence been named Laterite, from *Later*—a brick.

Geologists are much divided in opinion whether to regard it as a trap rock, or as a stratified one. In these provinces, it appears to be more of a conglomerate than any thing else. In some localities, as at Maulmain, it includes large fragments of sandstone, several inches in diameter. The geological position of the laterite at Amherst and Maulmain, is precisely that of decided beds of conglomerate near Tavoy, which lies immediately above the slate strata that rests on the granite.

The Tavoy conglomerate consists mainly of quartz pebbles, or angular fragments of quartz united by oxide of iron, which soils the fingers. Some parts of the strata are so fine that Dr. McClelland pronounced specimens that were sent him to be "sandstone, old." Other parts are coarse, with pebbles half an inch in diameter, and in some parts the rock is slightly amygdaloidal, approaching laterite; while on the other hand, there are portions of the laterite at Amherst and Maulmain which are considerably compact, with quartz fragments; and specimens might be selected with ease which could not be distinguished from the Tavoy conglomerate.

I never met with any rock even resembling laterite in the valley of the Tenasserim; and prof. Buckland does not appear to have had any in Mr. Crawford's specimens from the valley of the Irrawaddy.

ကဝံကျောင်း—*Ga-won-gyauk*.

LIMESTONE.

The limestone of the provinces wherever it has been traced, is found resting on a thick succession of slate and sandstone

strata, between it and the granite. On the Salwen it contains lead ore, like the metalliferous limestone of England and America, and it is not wholly destitute of fossils, although they are very rare. Captain Tremenheere found a species of *Terebratula* in the Tavoy limestone, which is characteristic of the English mountain limestone; and it may therefore be regarded as identical with the carboniferous limestone of the coal formation.

MILLSTONE GRIT.

Beds of conglomerate or breccia appear above the limestone in Tavoy province, where they occupy the place of the millstone grit in England. They appear, however, to belong to a more recent formation above the coal measures.

TERTIARY.

The Tertiary formation is fully developed in the valley of the Tenasserim. There are found beds of pebbles and sand partially consolidated; plastic clay containing lignite; soft shales with impressions of recent plants; and in some places, calcareous grit and gypsum, with conglomerates composed of enormous masses from the adjoining rocks.

Whether some of these belong to the tertiary or the new red sandstone formation may admit of doubt. Such products are found in both, and until they are ascertained to contain organic remains decisive of the latter, to separate them from the former is to make an arbitrary and unnecessary division.

A red sandstone from the neighbourhood of Pagan is imported into the provinces, for the use of Burmese women, to grind up their odoriferous woods upon, of which Dr. Buckland says: "It may with more probability be referred to the new red sandstone than to any other formation." The stone umbrella of the image at Amherst point affords a specimen of this rock.

တောင်ဦးကျောက်—*Toung-oo-kyouk.*

DILUVIUM.

The richest tin locality in the province of Tavoy is at the base of the eastern mountains, where the vallies are covered with a thick bed of diluvial pebbles and boulders, eight or ten feet thick, below which no tin is found.

CROSS SECTIONS.

FROM MONMAGON TO THE TENASSERIM.

Were a person to land at Monmagon, opposite the middle Moscos, and proceed across the province of Tavoy to the Tenasserim, and down that river to the highest point where Dr. Helfer found coal, he would see on the way nearly every rock that has been discovered in the Provinces. At Monmagon granite rocks appear below high water mark, and thence to the base of the range of hills that separates the valley of Tavoy river from the sea, is a sandy plain a mile across, which seems to have been originally covered by the ocean. The hills from the base to the summit are granite, rising at the right of the road to fourteen hundred feet high, as measured by Capt. Glover.

On the eastern declivity greenstone slate shows itself, and thirty miles further south, there are granite and greenstone down to the bank of the river. On descending the hill however from Monmagon, a well has been dug at its base, and from the bottom of the well a soft friable white stone brought up, which Baron des Granges said was "green sandstone, much decomposed—cretaceous group." The accuracy of this statement may be well doubted from the Geological position of the rock, but it is quite a peculiar sandstone, and I have not seen any thing exactly like it in any other place in the provinces. It bears some resemblance to very fine granular quartz.

Clayslate next appears, and continues to the banks of Tavoy river. In some places a kind of iron stone is seen, and a short distance north of the road there is a hill composed almost entirely of magnetic iron ore, while the bottom of a well in the vicinity, is floored with Tremeneerite.

After crossing Tavoy river there is an alluvial plain, one or two miles broad to Siam Hill, where a red conglomerate appears, bearing a strong resemblance to the laterite of Amherst province, and on its eastern margin is an igneous or altered rock, abounding in amygdaloidal cavities and pyrites. A precisely similar rock, but with less iron pyrites, is seen in the laterite at Moopoon. This is succeeded by an alluvial plain, but

the banks of Pagaya river which crosses it, show clayslate cropping out below the alluvium which is remarkable for containing a large quantity of small iron pyrites. Specimens of this slate after being in the cabinet one rains, were covered with a thick efflorescence of sulphate of iron, or copperas, from the decomposition of the pyrites. The hill at the village of Salung* which bounds this plain; is formed of claystone porphyry, soft, and of a bluish color, where not exposed to the weather. The little knoll a mile further east, on which the village of Ta-laing-doung† stands, appears to be formed of claystone. Soon after this white sandstone appears, and half a mile beyond, Nga-than-kyoung‡ is seen running over a ledge of white sandstone rocks. The same rock appears at intervals for two miles farther to a little distance east of the village of Pyee-doung,§ where an igneous dyke crops out of the bank of the river that has been called, but it is believed erroneously, grauwacke.

The hill east of Pyee-doung is formed of claystone porphyry of a reddish color, and more indurated than that at Salung. A small hill beyond has slate clay, and furnishes all that is seen in Tavoy bazar; and a hill east of this, shows claystone porphyry again near the mouth of Bya-hung-khyoung.|| Beyond this, a micaceous-slaty sandstone is seen cropping up across the road, and a few hundred yards farther east, common white sandstone is seen in the banks of Pagaya river. These sandstones appear near the base of a range of hills from five to eight hundred feet high, that reach Pagaya river at its forks about nine miles from Tavoy. This range seems to be wholly composed of thin lamina of slate, principally clayslate, in some places much contorted. Dr. M'Clelland designated one specimen that was sent him as "chlorite slate." The strata make an angle with the horizon of about 30°. East of this range, claystone porphyry appears again, and beyond this in the bed of a little stream, limestone apparently stratified shows itself, the beds making an angle of from 20° to 30° with the horizon.

*စလုံ၊

†တလိုင်တောင်။

‡ငါသံချောင်း။

§ပြည်တောင်။

||ဘူးဟုံချောင်း။

This is the locality from which Captain Tremenheere obtained specimens containing casts of a species of terebratula, which identifies it with the English mountain limestone.

In a small brook descending from a hill east of the limestone, are seen numerous beds of breccia, containing angular pieces of sandstone and quartz pebbles. They make an angle of 30° or 40° with the horizon dipping to the east, and leaning towards the granite west of Tavoy river as an anticlinal axis; as do all the other stratified rock that have been passed over, but this is the uppermost in the series; for the next that are reached a mile farther east are found dipping to the west, and leaning to the eastern belt of granite. The strike of the strata in all these rocks where observed, was from two to three points west of north and east of south.

The highest beds in the next series of rocks, appear in a range of hills back of the Karen village of Thalu or Lung-lung.* They consist of clay slate with sandstone alternating, some of them might be denominated colored shales. The strata are much contorted, and though in some places they make a small angle with the horizon, in others they appear to be nearly standing on their edges. Old red sandstone much indurated next appears, and beyond this in Khat brook† what Dr. M'Clelland called, "a finely laminated mica slate coarsely laminated with layers of clayslate." The strata are nearly perpendicular.

This is succeeded by M'Clelland's grey quartz rock, the greenstone slate of others; and hard clayslate with imperfect crystals of andalusite macle or chialstolite follows. Where the clayslate shows itself five miles north of this locality, it is filled with crystals of macle that are perfect. The next beds appear like graphic slate.—"Dark blue, uniformly mottled on the cleavage with dull specks of mica—soil and write;" says a correspondent. The "dull specks of mica," it is believed, are disintegrated, or imperfectly formed crystals of mackle. It is certain that perfect crystals of this mineral are found among them. Clay slate with layers of mica slate follow, and in leaving this rock near the mouth of Nyoung‡ brook; and ascending

*လုံလုံ။

†ခတ်ချောင်း။

‡ညောင်ချောင်း။

the mountains, claystone porphyry in a very indurated state, is found more than a thousand feet above the valley below. This is succeeded by clay state, and grey quartz rock, or greenstone slate, and then granite is again seen at perhaps two thousand feet above the sea.

After leaving the granite on the northern route by Lokekhyen, the first rocks that appear are different varieties of indurated or silicious slate. On the summit of the ridge which divides the waters that fall into the sea from those that pour into the Tenasserim, greenstone slate appears again, weathered on the outside for nearly an inch deep into a rock resembling red sandstone, or some varieties of laterite. On the summit of this ridge, which has a little table land, a narrow vein of granite obtrudes in a fine grained porphyritic rock. The vein is not more than half an inch wide and consists principally, if not altogether of mica and quartz, the former in the greatest abundance; and the rock which the vein pierces, seems to consist of the same minerals but contains numerous crystals of mica diffused throughout, that appear to have been formed there when the vein was ejected, for they are most numerous nearest the vein.

On descending the mountains into the valley of the Tenasserim, indurated clay slate, and quartz rock are repeatedly seen, and on these rests a white sandstone. At the foot of the mountains for a space of about six or eight miles long by three or four miles wide, is a diluvial deposit six or eight feet deep, rich in tin, and containing a little gold.

When the banks of the Tenasserim are reached a few miles east of the diluvium, a succession of beds of conglomerate or pudding stone are seen, consisting principally of rounded pebbles cemented by the hydrate of iron. They are inclined at a small angle with the horizon, and dipping towards the west and north, lean towards an anticlinal axis east and south. A few miles north of this locality, and lying above the conglomerate are beds of clay containing lignite.

Descending the river to the high banks at the forks of the Tenasserim, beds of indurated sand are seen cropping out beneath the conglomerate, which abound in impressions of leaves of dicotyledonous plants resembling the leaves of existing species, and below these, down to the water's edge are beds of shale

containing the carbonized stems of plants, and casts of small shells, some of which bear a strong resemblance to shells of the genus *onchus*. In the river and on the banks below, a breccia appears, which in some parts is a hard rock with numerous crystals of lime inclosing angular bits of shale; in others, it is a loose conglomerate with rounded pebbles of quartz, angular bits of white quartz, grains of mica, bits of decomposing felspar, large pieces of shale that seem to have been united with the mass in the form of clay, and numerous small rounded pebbles of chlorite, a rock which I have nowhere seen in situ in the Provinces. Below this conglomerate are the thick beds of shale, which have furnished the conglomerate with its fragments.

The river after leaving these shales, passes out of the open country, in which it has been rushing, into a hilly region, and the character of the rocks is immediately changed. Greenstone slate appears, and that is followed by a rock which some geologists have called an altered rock, but which corresponds almost precisely to a variety of claystone porphyry from Hungary, which I saw in the museum of the Asiatic Society. A few yards from the bank of the river, just below these rocks, are sulphureous hot springs.

For several miles further down, there is a succession of clay slate and sandstone strata, and they are followed by a conglomerate or breccia or grauwacke or claystone porphyry, for it admits of all these names. It is formed of a paste of claystone porphyry, imbedding more or less fragments of the clay slate on which it lies, and the fragments are usually angular. On the islands opposite Palau, a similar rock is found with rounded quartz pebbles. Resting on this rock in one place near the bank of the river, is a large mass of white limestone with veins of red oxide of iron running through it, that give it a fantastic appearance; and the Karens call it the "Giant's scull." It lies at the base of a high hill, from the summit of which it appears to have fallen, and where the limestone is doubtless in situ. This conglomerate continues for several miles, farther down, when clay slate re-appears, and after a few miles, it is followed by a basin covered with tertiary beds similar to those seen above.

Just above the mouth of Moung khyoung, from one to two

hundred feet of the beds are seen on the side of a precipice, the lowest of which is one of indurated slate clay, and above that, a very thick bed of conglomerate composed of angular fragments, as I judged, of the slate formation next below. Some of the fragments of slate are several feet, not to say yards, in cubic contents with their angles as sharp as if just broken from the rock to which they originally belonged. It should be observed however, that while some of the fragments appeared to be hard blue slate, many others were soft colored shales, apparently of the same age as the formation itself. It contains no boulders or fragments, so far as I could discover, older than the slate.

At the mouth of Moungh khyoung there appears to be a fault. A few hundred yards above the mouth of the stream, a hill some two hundred feet high suddenly appears on the alluvial bank of the river, with precipitous sides to the north and west, in which the strata are seen dipping down to the south. On reaching the mouth of the stream the river is very deep, broad, and still, and forms a small lake, and the strata again appear in the side of a precipitous hill below the mouth of the stream, dipping in precisely the opposite direction from that above, and at a considerably higher angle, while a short distance below, the hill disappears, and the strata are seen in the deep bank dipping in the same direction, but in a much smaller angle, and in the same direction, that all the strata below dip until reaching the granite. A fault at the mouth of the stream might produce these irregularities, by throwing down the ends of the strata on both sides of it, but most on the northern side. Slate clay containing alum, and granular gypsum are both found in this neighborhood.

On passing out of this basin, the claystone porphyry conglomerate is again observable for several miles; then clay slate, and that is succeeded for several miles by tertiary conglomerate, like indurated gravel, until granite is reached again in about latitude $13^{\circ} 40'$. Clay slate is seen resting on the granite on the south side, and that is followed by a succession of precisely similar rocks to those, that have been passed between the forks at Mata and the granite.

In about Latitude $13^{\circ} 20'$, are some curious piles of limestone resting on the claystone porphyry conglomerate, beneath which

clayslate crops out several hundred yards in thickness, and dipping at an angle of about 45° . The limestone appears in two or three isolated masses more than a thousand feet high with perpendicular sides, and apparently quite inaccessible. They resemble the limestone cliffs of Maulmain, but differ from them in being distinctly stratified in beds of a few feet in thickness. Though in sight of the river they are several miles from its banks, and only a very short distance above the highest point where Dr Helfer found coal. The coal lies above the limestone, and that is the place to look for true bituminous coal, but this is unquestionably wood coal or lignite, which shows that the coal measures are wanting in this place.

The geology of the valley of the Tenasserim below this point to Mergui, is only a repetition of what has been seen above.

FROM AMHERST TO THE THOUNGYEEN.

A trip across the Province of Amherst is of far less interest to the geologist, the rocks being seen in much less variety. At Amherst, granite and greenstone are succeeded by clay slate, mica slate, and laterite. At Moopoon, the laterite is seen again, and at Maulmain, sandstone, laterite, shales, and slate clay constitute the rocks, so far as they appear. At the mouth of the river Gyaing, where the white Pagoda stands, is sandstone; and from that point to the old city of Gyaing, the only rock seen is limestone.

The hills back of Gyaing are composed of sandstone and shale; the strike of the strata being north north-west and south south-east, with a dip of about 45° to the east, leaning like the strata at Maulmain towards the granite at Amherst as an anti-clinal axis, which shows that the limestone on the plain lies above the strata at Maulmain, and below that at Gyaing. On proceeding up the Dahgyaing, tertiary beds of a soft conglomerate resembling indurated gravel, are seen; and the lignite, which Mr. O'Riley says has been found on this river, probably exists in this formation.

In one or two places the river runs over banks of shale, dipping like the preceding strata to the east; the highest being within eight miles of the head of boat navigation, and this is the last rock seen dipping to the east.

When within eight miles of the eastern mountains, strata

appear dipping to the west and leaning towards the granite in those mountains. Laterite, clayslate, mica slate, and grauite are found on rising the mountain, and thence to the banks of the Thoungyeen, the boundary of the Province, a gentleman, who collected specimens for me, found nothing but limestone. Capt. Latter mentions sandstone as being abundant in the valley of the Thoungyeen, and Mr. Lonsdale says that the valley is bounded on the eastern side by granite mountains.

THERMAL SPRINGS.

The Provinces are well supplied with hot springs; and some of them are probably not inferior in their medicinal qualities to the fashionable Spas of Europe and America. Though their waters have never been subjected to any minute analysis, yet we know there is a great variety in the properties of different springs. They may be arranged in three different classes,—carbonated, sulphureous, and saline.

CARBONATED THERMAL SPRINGS.

The hot springs on the Ataran, according to Dr. Helfer's description, belong to the carbonated class. They are situated within two miles of the old town of Ataran, and Dr. Helfer writes: "There are ten hot springs or rather hot water ponds, of which I could only examine the nearest, as the access to the others was through deep water at 130° Fahrenheit. This one was a semicircular pond about fifty feet in circumference. In one place it was thirty five feet deep. The quantity of carbonic acid which the springs evolve, seems to render the neighborhood peculiarly adapted to support vegetable life.—The ground around the spring is strongly impregnated with iron, and the water which runs over the ochre mud has a strong styp-tic taste. The springs on the Ataran approach in their composition nearest to the celebrated waters of Tœplitz."

"Their medical properties would render them excellent remedies in a number of diseases, liver complaints would find a powerful remedy in them. If Amherst should be selected as a resort for invalids, the hot springs on the Ataran could easily be turned to advantage. In a direct line, they would be only four or five hours distant, and a road could be cut

through the country without difficulty, so that patients could be removed there and bathe in loco."

Dr. Morton found on analysis, that the waters contain a considerable quantity of calcareous matter, and that the tufa which it deposits on the border of the springs, is a carbonate of lime. They appear to arise from the mountain limestone, and thus to hold a geological position similar to that of the hot springs of Great Britain, most of which rise from strata below the coal, and hence from, or through the limestone.

SULPHUREOUS THERMAL SPRINGS.

About four miles below Matak at the forks of the Tennasserim, and a few miles north of the latitude of Tavoy, there are hot springs highly charged with sulphuretted hydrogen gas, so readily recognized by its smell which is precisely that of the washings of a gun barrel; the odor in both instances being produced by this same gas. All the stones in the springs are of a bright brass color, produced apparently by the deposition of the sulphur; and although the virtues of these waters are hidden from man, they appear to be well known to the beasts of the forest. To judge from the tracks around in the morning, the most incongruous parties are held here every night. The delicate little tread of the chevrotain and barking deer, are seen side by side with the massive steps of the elephant and rhinoceros; and the tiger, and the leopard seem to lay aside their fierceness, and peaceably walk away satisfied with a draught of the much coveted beverage.

Dr. Helfer said these springs belonged to "the class of sulphureous mineral waters, tinged slightly with chalybeate, like the water of Brighton." Their heat above the atmosphere is not great. Mr. Bennett at a recent visit, found the thermometer to rise in the hottest spring to only 119°. They rise from the slate rocks, like the warm springs of a considerable part of Germany.

SALINE THERMAL SPRINGS.

On the margin of the granite range east of Tavoy, either near the junction of the slate and granite, or in the

granite itself, is a series of the hottest springs in the Provinces. I have visited four or five in a line of fifty or sixty miles, and found them uniformly of a saline character. Around one nearly east of Tavoy, the stones are covered with an efflorescence resembling epsom or glauber salt. Mr. Bennett found the Thermometer in this spring, to rise to 144° . Major McLeod visited one of the series at Palouk, and writes: "There are two spots where the springs show themselves. One immediately in the right bank of the river, and another two or three minutes walk to the northeast inland.—There must be 30 or 40 bubbling up along a line of about 50 feet by 20.—The hottest was 196° another 194° . No disagreeable smell or taste."

The hottest springs are at Pai, ten or fifteen miles north of those visited by Major McLeod, and according to Phillips they are hotter than any on record out of volcanic regions, with the questionable exception of three springs in China, which, "probably exceeded the temperature of the air from 70 to 120 degrees." The principal spring at Pai,—for there are several, is in a little sandy basin in the midst of granite rocks on the margin of a cold-water stream, where it bubbles up from three or four vents, and on immersing the thermometer into one, the mercury rises to 198° , within fourteen degrees of boiling water. Its location is rather peculiar, not being in a valley like the others I have seen, but on the side of a hill more than a thousand feet above the level of the sea, and surrounded by large masses of coarse grained granite rocks, which seem to have been detached from the summit above.

MINERALOGY.

Our knowledge of the mineralogy of the Provinces has been increasing with each successive year, and will probably continue to do so for many years to come. Lead rich in silver, copper, manganese, Tremmenheerite a new mineral, chiasolite, chalcedony, carnelian, and agate have all been discovered within the last ten years; and we have every reason to believe, that the next ten will not be less fruitful in discovery.

EARTHY MINERALS.

COMMON QUARTZ.

Common quartz is one of the most abundant minerals in the Provinces.

ဂေါ်တံး

CRYSTALLIZED QUARTZ.

Small crystals of quartz are common in the Provinces, and large specimens of rock crystal are sometimes brought from the Siamese frontier. Some of the "Ceylon diamonds" which the Ceylonese offer for sale, are made of rock crystal; and many of the "rubies," and other precious stones, that the Shans bring with them in their annual caravan from the north of Burmah, are made of rock crystal colored artificially. They are heated and plunged into colored solutions. A gentleman of my acquaintance being about to visit Calcutta a few years ago, purchased a few of these "jewels," a great bargain, of a Shan who was anxious to return home, and therefore sold for fifteen rupees what, he said, was worth a hundred. On being subjected to the examination of a jeweler in Calcutta, they were found to be all either colored quartz, or paste, and not worth fifteen pice!

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လုံ့လုံ့ကျွဲ သာမိဂ်ကျွဲ

GREEN QUARTZ.

Green quartz, or prase, is sometimes found in the form of pebbles in our mountain streams, but it is not very abundant.

MILKY QUARTZ.

Milky quartz is occasionally found in the Mergui and Tavoy provinces.

AMETHYST.

Pebbles of amethyst, or violet quartz, are brought from the rivers in Burmah, where they are regarded as a variety of the sapphire; the Burmese name signifying "Egg-plant sapphire," or, as they are sometimes called, "Egg-plant flower stone," from the blue flower of the egg-plant.

ဒိုလခရန်၊ ကျောက်ခရန်ဖွင့်၊

YELLOW QUARTZ.

I have met with dull specimens of yellow quartz, or citrine, on the Tenasserim; but it is not common.

GRANULAR QUARTZ.

The laterite often incloses fragments of a granular quartz rock, which crumbles to pieces in the fingers into a fine quartz sand.

CAT'S EYE.

The cat's eye, a gem, which gives out a pearly reflection resembling the eye of a cat, is often seen set in rings, and is brought from Burmah. Comstock says: "It is in great request as a gem, and bears a high price;" but those seen in Maulmain market are not much valued. A small one may be purchased for two rupees, and one of ordinary size for five; while ten rupees is the highest price given for the best.

ကျောင်း၊ လုံမျိုးဗော၊ လာဘ်သင်္ခယီမင်

FLINT.

Flint does not appear to be found either in the Provin-

ces, or Burmah; all the flints that are used being imported from Bengal.

ဒီးသင်ကျောက်၊ လုံမပါ၊ လာ၍မည်။

COMMON CHALCEDONY.

Chalcedony, both white and yellow, has been discovered at Moopoon near Maulmain, and is very abundant in Burmah. "Chalcedony passes insensibly into agate, and carnelian, and perhaps into hornstone."

မဟူရာဖြူ၊ *white*. မဟူရာဝါ၊ *yellow*

CACHOLONG.

Streaks of cacholong, or milk white chalcedony, are seen on some of the agates.

မဟူရာဖြူ။

SARD.

"This is of a deep rich, reddish brown color, probably a variety of carnelian," but by some regarded as a variety of chalcedony, and is seen occasionally as constituting a part of some of the agates offered for sale.

မဟူရာနီ။

ONYX.

Mineralogists are not agreed in the definition of onyx. According to Comstock, it is a variety of chalcedony, "consisting of alternate layers of opaque milk-white chalcedony, or cacholong, and of the bluish translucent chalcedony,"—the chalcedonyx of Jameson. Such are found at Moopoon.

မဟူရာဖြူကျောင်းဝင်း။

Aiken says: "Two or more plates of any of the varieties of the chalcedony form the onyx." Such are found in Burmah, if not in the Provinces.

မဟူရာကျောင်းဝင်း။

SARDONYX.

According to Comstock, sardonyx consists of stripes of

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"onyx and sard," or sard and chalcedony; and such stones are occasionally seen in the hands of the natives.

မဟူရာကျောင်း။

CARNELIAN.

Carnelian is very common in Burmah, and has been found at Moopoon and Mergui. "Its principal color," says Jameson, "is blood red, of all degrees of intensity." One of its Burman names is, "Fowl's blood."

ကြွင်းသွေး။ မဟူရာနီ။

"It also occurs sometimes milk-white, and in some specimens it is difficult to decide whether it belongs to chalcedony, agate, jasper, or carnelian." Some varieties are yellow.

မဟူရာဝါ။

BLOODSTONE OR HELIOTROPE.

The green stone with red or yellowish dots called bloodstone, or heliotrope, is not rare; but whether found in Burmah or not, is uncertain. The natives call it by the same name that they do green jasper.

နဂါးသွေး။

AGATE.

Agate is found at Moopoon near Maulmain, and the natives say at Mergui also.

မဟူရာ။ *Common agate.*

မဟူရာကြွင်း။ *Striped agate*

If the stripes are chalcedony and cacholong, then the stone thus designated will be the onyx. Chalcedony, carnelian, agate, and onyx, are all

မဟူရာ။

YELLOW JASPER.

I have met with yellow jasper on the Tenasserim, but it is not of common occurrence.

မဟာဆတ်ဆတ်။

GREEN JASPER.

A soft green jasper of which I have specimens, said to be found in the Provinces, the Burmese call,

သင်တွမ်နီကျောက်။

Precious green jasper, including striped jasper, is called by the Burmese,

.နဂါးသွေ။

PRECIOUS GARNET, OR ALMANDINE.

Precious garnets in the form of pebbles, are often seen for sale among the Burmese; but it is not certain that any are found in the Provinces. Mineralogists say, the most beautiful come from Sirian the capital of Pegu. It is the carbuncle of the ancients.

"In a creek on the Siamese side" of the Tenasserim valley, Dr. Helfer says "rubies are found. They are however of a very inferior description"—probably garnets.

ကျောက်နီ။

ပန်ရည်။ *a variety with a violet tinge.*

ဗိဇ္ဇုကို။ *inferior varieties.*

COMMON GARNET.

The common garnet is occasionally seen in the sands of our rivers, but it is not abundant.

ပခဲကျောက်။

PYROPE.

A variety of the garnet, either identical or nearly resembling the pyrope garnet, is brought from Burmah. It is characterized by giving to transmitted light a yellow tinge, or as the natives say, the color of the ox's gall; and hence the Burmese name, which in Pali signifies ox-gall.

ဂေါဓတ်။ ဂေါဓါရ။ (*Pali.*)

CLAYSLATE.

Clay slate is a very abundant mineral throughout the Provinces, and is found in numerous varieties, soft shales,

and hard indurated slate abounding in silex ; roof-slate, and a variety that soils and writes like graphic slate.

ROOFSLATE.

In some localities, especially in one near the head waters of a branch of Toungh-byouk river, the clayslate cleaves into large thin plates that would serve for roof slates, or for slates to write upon.

SHALE.

Shale characterized as in " layers often uneven, protuberant, or knobby—often disintegrates and falls to pieces," is abundant in the neighborhood of Maulmain, and near the forks of the Tenasserim,

BITUMINOUS SHALE.

Shale containing vegetable impressions, and carbonized stems of plants, is found at the forks of the Tenasserim, and perhaps belongs to the class of bituminous shales, though it does not appear to contain much bitumen.

GRAPHIC SLATE.

A slate that " soils and writes," as Dr. M'Clelland described it, is found east of Tavoy, and another and softer variety is found in Maulmain near Tremenheerite. They may be justly regarded as varieties of graphic slate.

SILICIOUS SLATE.

Silicious slate is found near the granite mountains east of Tavoy. By some it is denominated indurated slate.

CLAYSTONE.

There is a thick bed of reddish claystone, a few miles east of Tavoy, that cannot be distinguished in hand specimens from Scotch claystone.

IRON CLAY.

Iron clay is very abundant in the laterite, which is often wholly composed of iron clay.

PORCELAIN CLAY.

The clays have not been analyzed, but there are clays at the bases of some of the granite mountains, where the felspar has decomposed so much, that the paths are thick with a coarse quartzose sand, and a few grains of mica that remain. As porcelain clay is produced by the decomposition of felspar, such is probably the clay in the localities to which reference has been made.

POTTER'S CLAY.

The clay in which the petrified trees are found has the appearance of fine potter's clay; and clays from the banks of the Ataran and Gyaing rivers were found, Mr. O'Riley says, "after several trials at the Calcutta mint, to possess every good property of the best English fire clays."

LOAM, OR BRICK EARTH.

The alluvial beds within the reach of tide waters, contain numerous strata from which bricks are made.

REDDLE.

Reddle, or red chalk is seen in the bazar, but it is imported, though it probably exists in the provinces.



AUGITE.

On the banks of the rivers near Maulmain and Tavoy, masses of dolerite are found which contain augite. They are not however found in situ in the Provinces, and have probably been brought from the Isle of France.

HORNBLLENDE.

I have met with hornblende as a constituent of greenstone; but never in the Provinces in any other connection.

LABRADOR HORNBLLENDE, OR HYPERSTHENE.

Baron des Granges, to whom was sent specimens of the greenstone east of Tavoy, said that the hornblende it contained was Labrador hornblende.

BLUE SAPPHIRE.

Blue sapphires are brought from Burmah, and Dr. Helfer writing from Mergui says : "A Karen informed me, there are precious blue stones to be had, which the Shans collect and carry to Bangkok. He described the place as eight days distant, and did not know whether it was British or Siamese."

နီလာဌက်ခါ၊ နီလာစိန်၊

RED SAPPHIRE, OR ORIENTAL RUBY.

The red sapphire, or ruby, is brought from Burmah, where it is found with the common blue sapphire, probably in the valley of the Salwen. The Burmese call it by the same name that they do the precious garnet, and do not appear to be always able to distinguish them.

ကျောက်နီ၊ ပတ္တမြား၊

VIOLET SAPPHIRE.

The violet sapphire, or Oriental amethyst ; is found in the same localities as the common sapphire.

နီလာဝရန်၊

YELLOW SAPPHIRE.

The most valuable topaz in Burmah, is the yellow sapphire, or Oriental topaz.

ဥယံပရာ၊

GREEN SAPPHIRE, OR ORIENTAL EMERALD.

A green gem is often seen for sale among the Burmese, brought from Burmah, which Europeans usually call emerald ; but it is probably a blue sapphire. The true emerald may however be among them.

မြဲ၊

CORUNDUM.

Corundum pebbles are found in " the gem-sand of Ava river ; " and they probably exist in the sands of some of

the rivers in these provinces. The common emery is a variety of this species.

မိန့်သွေးကျောက်၊ ရွှေသွေးကျောက်၊

SPINELLE RUBY.

By far the larger proportion of the rubies offered for sale, are, it is believed, spinelle rubies. I have a small specimen which every native, who has seen it, regards as one of the best kind of rubies, or red sapphire, but its natural crystalline form is easily recognised, as a regular octahedron ; while that of the oriental ruby is a six sided figure, or some of its modifications. They are seen of all shades. Blood red, the proper spinelle ruby ; rose red, the balas ruby, orange red, or rubicelle ; and violet colored or almandine ruby. It is no easy task to distinguish, accurately, the true character of the different stones offered for sale as rubies. Both Europeans and natives often make great mistakes. An English officer bought a " ruby " in Maulmain a few years ago for fifteen rupees, his friend bought one for five rupees ; and the rubies were thought to be of nearly equal value ; but on walking into a jeweler's shop in Calcutta, a year or two afterwards, the jeweler offered *four hundred and fifty* rupees for the one, but refused to give two rupees for the other, characterizing it as " a worthless garnet."

ကျောက်နီ၊ ပတ္တမြား၊

မိဇူကုံ၊ *the inferior varieties.*

CEYLANITE.

The dark blue, or blackish varieties of spinelle, called Ceylanite or pleonaste, are often offered for sale by the Shans under the same name as the sapphire.

နီလာ၊

AVA GEM—SAND.

Gem sand from the neighborhood of Ava, is sometimes one of the Shan articles of merchandize. It consists of small fragments of nearly all the precious stones found in the country, but garnet, beryl, and spinelle are its principal constituents, more especially the last, which seems to

constitute more than three fourths of the whole mass. A single handful will contain specimens of every shade, black, blue, violet, scarlet, rose, orange, amber yellow, wine yellow, brown, and white. Many retain their original crystalline forms, some have the fundamental form of the species, a perfect octahedron; but many others have some of the secondary forms, among which it is not uncommon to see twin crystals with three re-entering angles, formed by two segments of the tetrahedron truncated on the angles, and joined together by their bases.

COMMON SERPENTINE.

Dr. Helfer found serpentine on the islands of the Mergui Archipelago, and Dr. Morton picked up a boulder near Amherst, containing a small vein of common serpentine; which indicate its existence in the Provinces, although no definite locality where it exists, is known.

PRECIOUS SERPENTINE.

Precious serpentine exists in the Hookhoong valley, north-west of Ava, whence it is exported to China, and brought into the southern parts of the empire, but it has not yet been discovered in these provinces.

ကျောက်မီးနီ

ZIRCON.

Some of the best of the Ceylon jewels are probably zircon, the pale variety of which supplies the diamonds used in the jeweling of watches; and Jameson says, it is often sold as an inferior kind of diamond.

ထိတိုက်မီးနီ

BERYL.

Beryls are found in the sands of the Irrawaddy; and may probably be found in some of the rivers, that descend from the granite mountains in these provinces.

မီးနီ

CARBONATE OF LIME.

STALACTICAL CARBONATE OF LIME.

ကျောက်စက်၊ လုံမာလူ့ဇာ. သာဂ်မုဂ်လီၤစီၤ၊

GRANULAR LIMESTONE.

ကျောက်ဖြူ။

COMMON LIMESTONE.

တုံကျောက်၊ လုံ့မ္ဘ၊မ္ဘ၊လုံ့. ထုတ်လား၊လားထုတ်

CALCAREOUS GRIT.

There is a calcareous grit apparently of the tertiary formation, found on the Tenasserim in about latitude 14° 20'. It is composed of grains of sand united by a calcareous cement. It is of a uniform grey color, and makes the best whetstones that are found in the provinces.

CHALK.

Chalk is seen in the bazars, but it does not appear to be a production of this country, being imported from Bengal.

မြေ

လှသံခွက်

ဖိနပ်ခွက်

MARL.

The soil may be characterised as marly in the neighborhood of some of the limestone ranges, but no beds of marl have yet been discovered.

CALCAREOUS TUFA.

Several varieties of calcareous tufa are found in the vicinity of the limestone rocks, formed by the deposition of the waters that run over them. They often contain shells belonging to existing species; especially *Helix anguina*, and *Cyclostoma tuba*.

ARRAGONITE.

Some of the caves on the Salwen furnish a species of double refractive spar, which I judge to be Arragonite.

DOLOMITE, OR MAGNESIAN CARBONATE OF LIME.

A few of the limestones in the east part of Amherst Province, Mr. O'Riley found to be magnesian carbonates; and Prof. Mitchell in his analysis of the lead ore from the Salwen-limestone found magnesia among its constituents.

A limestone in Arracan, Mr. Stilson has used as a lithographic stone in a small way; but it does not do well.

မာရ်

FLUOR SPAR.

I have a small specimen of bluish crystals of fluor spar, which the Burman, who brought it, said was found in the northern part of Province Amherst. As the mineral is often found in connection with lead, it is probable they will be found together in these Provinces.

Fluate of lime.

SELENITE.

A fine transparent crystal of selenite in the shape of a parallelopiped was brought me by a Burman, who said it was found in Amherst Province.

Crystallized sulphate of lime.

Foliated “ “

ကျောက်သလင်္ဂဂါတံ။

FIBROUS GYPSUM.

A fine variety of fibrous gypsum is seen in some of the China shops; but it is brought, the Chinese say, from China. They use it in medicine, and say “it is very cooling” !

Sulphate of lime.

Sha-koung.

(Chinese.)

GRANULAR GYPSUM.

Gypsum is found near the banks of the Tenasserim in about latitude $13^{\circ} 40' N$. It is granular and friable, and does not correspond in appearance to ordinary specimens; but Dr Morton who analyzed it, pronounced it a decided sulphate of lime.

ACIDIFEROUS ALKALINE MINERALS.

SALTPETRE.

Saltpetre is found in some of the caves, and is imported from Rangoon.

Nitre.

Nitrate of potash.

Prismatic nitre.

ရန်းပိန်း၊ ဟျာဒါ၊ ဘျီဆွန်၊

NATRON.

Natron is abundant in the vicinity of Ava, where it is used by the Burmese instead of soap, and they call it "earth soap."

Carbonate of soda.

မြေဆပ်ပြာ။

BORAX.

Borax is seen in the bazar but it is imported.

Borate of soda.

Tincal, (unpurified.)

လက်ချား။ မီးခွေ၊ သဲခွေ။

ROCK SALT.

Rock salt is also seen among the drugs, being used by the natives in medicine.

Chloride of sodium.

Muriate of soda.

သိန္ဓေသား၊ ဘုံ၊ မြေ၊ အံသင်သံတီ၊ အံသင်လင်

SAL AMMONIAC.

Sal ammoniac is not a product of the Provinces, but it is sold by the druggists.

Muriate of ammonia.

ဝေက်သား၊ ဝေက်၊ ဝေက်သင်၊

ACIDIFEROUS ALKALINO-EARTHY MINERALS.**ALUM.**

Alum is found in a reddish slate clay, or soft clayslate in the valley of the Tenasserim, about forty miles below Matak at the forks; this, with an indurated sand from a neighboring locality that also contains it, is the only alum that has been yet met with in the Provinces.

Sulphate of alumine and potash.

ကျောက်ရည်၊ မိုးဒေါ့၊ လာၤဆိဉ်။

ALKALINO-EARTHY MINERALS.**MICA.**

Mica is found in the mica slate and granite, but has not been met with in large plates on this coast, though such are sometimes seen for sale in the bazar. It is usually white, but black mica occurs in the granite of Double Island. It is often by a misnomer called talc.

လင်းခြံး။

FELSPAR.

Crystals of felspar abound in the granite, and where it is porphyritic as on Double Island, and on the islands opposite Yay, they are sometimes quite large. It is usually white, but the granite at the mouth of Tavoy river, on the east side, is studded with beautiful crystals of flesh-colored felspar.

MOON-STONE.

Some of the "cat's eyes" that are brought for sale by the Ceylonese, are made of adularia or moon-stone, a variety of felspar found in Ceylon resembling opal. In Europe it is often sold for opal.

ကျောင်း။

2*

SOAPSTONE.

Soapstone, potstone, or steatite, is constantly for sale in the stalls, being used by the Burmese to write with on their blackboards, as Europeans use chalk. It is not however a production of the Provinces but is imported from Burmah, where it is abundant.

ကန်ကုသံ၊ ဖရော့၊ ဖရော့၊ ဝက်၊

CHLORITE.

Grains, or lamina of chlorite are found in connection with tin; and portions of the beds of claystone east of Tavoy, contain chlorite slate.

ကျောက်ပဲလဲ၊

SCHORL.

Schorl, or black tourmaline, is found in quartz near the mouth of Tavoy river on the east side, and also at the foot of the eastern mountains, near the head waters of the Dahgyaine, north east of Maulmain. These are the only localities where I have met with this mineral. In both, the crystals are numerous, and in Tavoy they are large, but not so handsome as seen in foreign specimens.

အပြက်နက်၊ အကွတ်နက်၊

GREEN TOURMALINE.

A green jewel that cannot be distinguished by the eye from beryl, is brought with the Ceylon diamonds; it is however, green tourmaline; as may be ascertained by a very simple test, for beryl scratches quartz, but tourmaline is scratched by quartz.

သီဟိုဠ်မိန့်၊

CEYLON DIAMONDS.

White jewels of an inferior quality are often offered for sale in Maulmain under the name of Ceylon diamonds, but they are usually made from green tourmaline. White tourmaline, is a rare mineral, but the green variety being common, the jewelers by exposing it to heat expel its color and it becomes white.

သီဟိုဠ်မိန့်၊

YELLOW TOURMALINE.

Among the Ceylon diamonds that are seen for sale in Maulmain, is a yellow jewel resembling a topaz; but which I find on examination to be yellow tourmaline.

ဥယျာဇာရာ။ သိဟိသ်ဗိနိ။

WHITE TOURMALINE.

An occasional crystal of white tourmaline is seen among the crystals of the black variety in specimens from the Shan states; but I have never met with it in the Provinces.

Indicolite, white variety.

အကွတ်ဖြူ။ အဖြိုက်ဖြူ။

RED TOURMALINE.

Red tourmaline is found in Burmah, though it is not seen here. Jameson says the king of Ava gave a specimen to Symes which was valued at five hundred pounds in England.

Rubelite.

Tourmaline rubelite.

ဗိနိနိ။

MACLE.

In the slate strata near the granite east of Tavoy, are numerous crystals of what Hitchcock calls andalusite macle; because with many other mineralogists he thinks andalusite, and chiasolite or macle, one species. The crystals are very small, but exceedingly numerous. Occasionally their rectangular ends are marked with the Greek Chi, or English X, from which they are called chiasolite; but more frequently the X is wanting. It is much softer than either andalusite, or chiostalite, as described in works on mineralogy, but it is quite as hard as are specimens which I have received from America.

It must be a very rare mineral in India; for the Curator of Mineralogy and Geology, of the Asiatic Society's Museum did not recognize it as any mineral with which he was acquainted; and other Indian geologists, and miner-

alogists have been equally puzzled with it. There can be no mistake however, in the identification, for I have specimens before me, labelled by one of the first mineralogists in America, differing in no important respect from the Tavoy mineral.

METALIFEROUS MINERALS.

PLATINA.

Dr. Royle says that platina is found in Burmah ; but on what authority ? Captain Glover had a specimen which he obtained from a priest in Tavoy, that he thought resembled platina more than any other metal ; and I had a specimen of a Tavoy mineral with the general aspect of platina, which occasioned me no little perplexity, until I found that it was a mixed metal formed of silver, bismuth, zinc, and some other things to aid the alchemists in their search for " the philosopher's stone."

GOLD.

Though not quite so abundant as in California, yet there is perhaps, no mineral except iron, more universally diffused over the Provinces, than gold. It is found in the lead near their northern boundary, it is washed from the sands of the Tenasserim on the south, and the streams, that tumble from the high granite mountains between Yay and Monmagon, are constantly 'rolling down their golden sands' into the valleys around. It has been collected, in small quantities in the tin deposits east of Tavoy, Mr. O'Riley found gold in the tin from Henzai, half a degree south of Yai, and " almost all the creeks, " says Dr. Helfer, " coming from the eastern or Siamese side of the Tenasserim river, contain gold. The greatest quantity is obtained close to the old town of Tenasserim where people wash it, and obtain sometimes one anna's weight each, during the rainy season."

The richest deposit of gold in the Provinces, is however, at the head waters of Tavoy river, where it is found in an alluvial or diluvial formation of red earth and pebbles, very

similar to that in which gold is found in North Carolina. On the east side of the mountains at the base of which this deposit rests, "the Siamese Government," says Dr Morton, "have several hundred men permanently occupied, each of whom it is said, is expected to deliver one tickal (about one rupee and a quarter) weight of gold dust per annum.—The Burmese authorities in former times also employed people in this work at the streams on our side of the boundary, but though the quantity then procured was greater than at present, this does not appear to have ever been considerable. The method adopted is that of digging a longitudinal excavation in the sand, and washing from time to time the deposit found therein."

Three or four years ago, the head native officer in Tavoy made an experiment at "the diggings" on Tavoy river, and by the washings of nine days, obtained gold to the value of about ten rupees. This gold appears to contain a considerable proportion of silver. Mr O'Riley says that the Assay Master at the Mint in Calcutta reported it :

Gold.	87.895
Silver.	9.241
Base metal.	2.864

100.000

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MERCURY.

Quicksilver, or native mercury, is imported from Burmah ; and it is said to be brought to Ava from China.

မြဲခါး ဝဂါ. ဝတါး ပါရခါး (Pali.)

CINNABAR.

Manufactured cinnabar is found in all the bazars, but it is imported. The native doctors use considerable to salivate their patients, which they do most effectually by causing them to inhale its fumes. The Burman name appears to be derived from the Sanscrit.

Vermilion.

Sulphuret of mercury.

ဟင်္သာပရိး ဟင်္သာပရိး (Sanskrit)

SILVER.

In the lead ore of the Salwen valley, which Dr. Morton sent Professor Mitchell for analysis, "the quantity of silver appeared to be considerable;" and in the mines north of the provinces, silver is said to be found mixed with lead. Mr. O'Riley had a specimen of an ore of silver, antimony, copper, and sulphur brought him, which produced thirty-five per cent of silver; and the Tavoy gold, it would appear, contains nearly ten per cent of the same metal.

ငွေ ဝါး ဝါး

ဘော် pure silver.

မောရိဝါးငွေဝါးကျောက် silver.

COPPER.

Dr. Helfer says: "The existence of copper on the Lampei Islands, the very first I suppose in this part of India as yet traced, is worthy of attention, and may lead to farther discovery of extensive veins of this ore."

Mr. O'Riley states, "that specimens of copper ore have been brought from several islands of the Mergui Archipelago, and all obtained appears to be of the same character, viz the grey copper ore, containing from forty to fifty parts of the metal in combination with antimony, iron, and sulphur." He has also "traced the existence of the sulphuret of copper" on the Ataran; and I had a fine specimen of the green carbonate, or malachite, brought me by a Burman who said he received it from a Karen, who represented that it was found near the head waters of the Ataran; and other natives have assured me, that the same mineral exists up the Salwen.

ကျေးဒီး ဝဗ္ဗဝါး ဝါးဝါး

မောရိဝါးကျေးဒီးကျောက် copper ore.

ဘာသဒ္ဓိကာ green carbonate of copper, or malachite.

BLUE CARBONATE OF COPPER.

The blue carbonate of copper is seen in the same

specimen united with the green carbonate. The natives say it is found in Province Amherst, but I have seen it only in specimens from Cheduba near the coast of Arracan.

ဘာလရက္ခာ။

BLUE VITRIOL, OF BLUESTONE.

Blue vitriol is imported from Burmah, and seen in all the bazars, but is not a production of the Provinces.

Sulphate of copper.

ရက္ခာ။

LEAD.

The limestone of the Provinces probably contains large quantities of lead. In the valley of the Salwen, there is a rich vein of argentiferous galena, which is reported to appear on the surface. A specimen that Dr. Morton sent to England for analysis, was said to be a very valuable mineral, and destined to make a fortune for some one. Professor Mitchell in the certificate that he furnished Dr. Morton of the analysis, says : " It contains

Lead,	
Sulphur,	
Silver,	
Gold, (traces,)	
Lime,	} Carbonic acid,
Magnesia,	
Iron,	
Silica.	

It is a sulphuret of lead or galena. The quantity of lead and silver appears to be considerable, but there was not sufficient of the mineral to estimate either." The ore is seen in the limestone, precisely as galena is found in the limestone of the Mississippi, one of the richest known deposits of lead in the world.

Mr. O'Riley states that the carbonate of lead exists near the head waters of the Hougdarau.

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၆၃၇.

MINIUM.

Manufactured minium is seen in the bazars, but it is not made in the Provinces.

Red oxide of lead.

ဆန်း

BISMUTH.

Mr. Piddington the Mineralogical Curator of the Asiatic Society's Museum, mentions in his reports, that he found bismuth in one of the ores sent him from "the antimony mines" near Maulmain; and it is found in connection with silver in Burmah.

ဣတ်

ဘော်နင်းဣတ်

IRON.

There is a large variety of ores of iron in the Provinces, some of which are uncommonly rich in metal.

COMMON PYRITES.

Iron pyrites are very abundant in the Provinces. In some places they contain arsenic, and constitute arsenical sulphuret of iron. The Burmese names though usually applied to iron, are generic, and might be applied to any pyrites.

Sulphuret of iron.

ဗဟန့်ကျောက်။ သံတိုက်ကျောက်။

ဗဟန့်ရွှေဝါ *yellow pyrites.*

ကျောက်ဩဝါ။ *globular masses containing pyrites in the centre.*

ကျောက်တမင်စောက်။

ဗဟန့်ကြက်ဆေး။ *small iron pyrites.*

LOADSTONE.

About three miles north west of Tavoy, is a hill upwards of a hundred feet high which appears to consist almost wholly of magnetic oxide of iron. A large rock near its

summit is highly magnetic, and constitutes a magnificent loadstone.

Dr. Ure to whom Mr. Blundell sent specimens of this ore reported :

“ 1st Compact magnetic iron ore.—Tavoy, No. 1.

“ Colour iron black with a metallic glimmer, fracture fine grained, possesses magnetic polarity, specific gravity 3.511, compared to water=1,000.

“ It yields in analysis the following constituents :

Peroxide of iron 86.5 equivalent to 60.55 metal.

Silica with a trace of phosphate } 3.5
of lime, }

Water, — ... 10.0

100.0

It contains no manganese or titanium.

“ 2d Compact magnetic iron ore.—Tavoy, No. 4.

External and Magnetic characters as above.

Specific gravity, 3.462.

It yields in analysis :

Peroxide of iron 86.0 equal to 60.2 metal.

Silica with a trace of } 0.9
phosphate of lime, }

Water, 13.1

100.0

It contains neither manganese nor titanium.

“ 3d Tavoy ore, No. 2.—External characters as above.

Specific gravity, 4.369.

“ 4th Tavoy ore, No. 3.—Characters as above, as to aspect and magnetism.

Specific gravity, 4.100.

“ The two latter samples are even richer than the former, as is evinced by the specific gravity, but they are all quite rich enough and pure enough for making the best quality of bar-iron and steel.

“ I instituted two elaborate sets of experiments in search of titanium, which when present in any notable quantity

in iron ores, renders the iron made from them red-short, but I found none in the above ores."

Octahedral iron ore.

Magnetic oxide of iron.

သံလိုက်ကျောက်၊ ကျောက်သံစား၊

SPECULAR OXIDE OF IRON.

There is a very rich ore of this species on one of the branches of Palouk river. The natives think it an ore of silver, and call it "the silver stone."

ငွေကျောက်၊ လုံဝါ၊ သာၤစုံ၊

BROWN OXIDE OF IRON.

Iron ore is very abundant near Mergui, and according to Dr. Ure is brown hematite. Of the specimens that Mr. Blundell sent him, he wrote :

"The three samples of iron ores from Mergui, are brown hematites, and from their density, will afford good iron in the smelting furnace.

Mergui iron stone No. 1	specific gravity	3.37.
Ditto.	Ditto. 2	Ditto. 3.18
Ditto.	Ditto. 3.	Ditto. 3.32."

သံကျောက်၊

RED OCHRE.

There is a fine bank of red ochre near Kallioung on Tavoy river. It might perhaps, be turned to account in a commercial speculation. Comstock says : "It is sometimes employed as a pigment, under the name of Indian red ; but more commonly, it is believed, under that of Spanish brown."

Ochery red oxide of iron.

မြေနီ၊ ဂူခံၣ်ဝါ၊ ဖိနီနီနီ၊

CLAY IRON STONE.

Several varieties of clay iron stone are seen in the Provinces, among which, the nodular variety is common.

Argillaceous oxide of iron.

သံကျောက်၊

BOG IRON ORE.

Bog iron ore is very abundant in the Provinces, and in many places is quite rich in metal. It occasionally contains vegetable petrefactions, some of which have the form of branches of trees, but are wholly composed of iron ore, and which the Burmese call

မြောက်ညိုကျောက်။

COPPERAS.

Copperas, or sulphate of iron, is often formed from the decomposition of pyrites or sulphuret of iron, forming an efflorescence on the rock that contains them.

Sulphate of iron.

ဘီလေရတ္တာ။

TIN.

Tin is abundant in the Provinces, commencing from the mountains in which Tavoy and Henzai rivers have their rise, the northern limit of tin in the Provinces, to the southern boundary of Mergui, Pakchan river. The richest locality in the province of Tavoy, is nearly opposite the city of Tavoy on the eastern side of the mountains.

That large quantities of tin must have been found in Tavoy three hundred years ago, we have evidence in an incidental remark from Mr. Ralph Fitch; who, says Mr. Hough in the Maulmain Chronicle, "travelled in this part of the world in about the year 1586, or 1587." He says: "I went from Pegu to Malacca passing many of the sea ports of Pegu as Martaban, the Island of Tavi whence all India is supplied with tin, Tenasserim, the island of Junkselon, and many others."

Captain Tremenheere found the richest deposit of tin in the Provinces, at Kahan on Mergui Island, about eleven miles above the town, and near the Tenasserim river. "Kahan itself," he writes, "is the highest portion of a low ridge of hills, not more than 200 feet above the level of the river: it is composed of a soft friable white sandstone rock, the upper portions of which are decomposed and irregular. The surface gravel does not contain tin. It is found in the crystallized form inter-

spersed in decomposed granite, forming a vein about three feet wide, which is enclosed by the white sandstone rock, and dips down at a high angle with the horizon.

“ Large scales of chlorite occur with it, which, as they are generally found where the tin is most abundant, is called by the natives ‘the mother of tin.’ The face of the hill is in one spot scattered over with these, which appear to have been brought down from the vein with other matter from which the tin has been separated by the usual mode of washing. It will be noticed, that the granite is completely decomposed, and that the crystals would be easily separated by washing. No tin has been raised here since the country came into our possession, but the locality has been known. It was worked during the Burmese rule, and valued as supplying the richest ore of tin. A Burmese residing near the spot, pointed out the place where his operations had ceased. He had followed the direction of the vein alluded to, as well as he was able, and had driven a gallery under ground in an inclined direction upwards, till the bank above fell in, when the mine was abandoned. He stated that he had procured considerable quantities of tin daily, and that he often found it in large masses mixed with yellow ground. Arriving at the spot where his work had terminated, I set people to excavate and find, if possible, the vein which had been described. It was reached after about two hours’ digging, at the depth of five feet from the surface of the cut in the hill in which we stood. In about a quarter of an hour, a few baskets of the decomposed granite were removed down the hill, from which an amount of the crystallized peroxide of tin, equal to 63.176 grains of pure tin, were collected.

“ The crystallized form in which the ore is here found renders its separation extremely easy, and the whole processes of stamping and dressing, which in England are tedious and expensive operations, can thus be dispensed with. No arsenic or sulphur being mixed with the ore, it need not be roasted before it is placed in the furnace.”

This ore he adds, as quoted by Mr. O’Riley, “ contains specimens of maced crystals, which in weight and size

surpass any thing I have ever seen in Cornwall, or in cabinet specimens. Specimens have been extracted of great weight and richness, consisting of large macled crystals of tin on quartz, and contain more tin in proportion to the bulk than any specimens I have before seen. The largest, which measured about fourteen inches square by twelve deep, was so heavy, as to require some exertion to hold it steadily in both hands."

In another report, Captain Tremenhare writes : " With the view of ascertaining its value in the home market, I transmitted, a box of average samples of the ore, to a smelting establishment in Cornwall, (Messrs. Bolitho & Co.) having extensive connection with the tin mines of that country. In April 1843, Mr. Thomas Bolitho informed me that—' The samples of once-washed ore produce about 70 per cent. of tin, and the twice-washed yields nearly 75 per cent. The metal is very good, being almost free from alloy ; some of the samples which have been sent to me from the Malayan peninsula contain titanium. The ore appears to separate from the matrix very easily.

' The consumption of tin throughout the world increases so slowly, and the supply at present being more than equal to the demand, there is little inducement to speculate in tin mines.

' The produce of Cornwall is 6,000 tons per annum, and we calculate that the quantity produced at Java together with what is raised in the Malayan peninsula, will rather exceed the produce of Cornwall. The average price of tin in Cornwall has been about 72s. per cwt., but it is now as low as 56s., which is the present price of the best Straits tin, and tin mines are suffering greatly from the depreciation in the value of their metal.

' It may serve for your guidance to know, that at this moment tin ore of the description of the sample twice-washed, would fetch in England about £ 46 per ton.'

" The following calculations of the probable result of a shipment of tin ore, and of the metal, have been obligingly made for me by two mercantile gentlemen of Maulmain. They are based on the lowest prices which, according to

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Mr. Bolitho, were obtainable in the market in April 1843, and show a probable profit on tin ore of 7s. 8d. per cwt. ; but a loss on shipment of the metal of 12s. 4d. per cwt. in one case, and 4s. 9d. per cwt. in the other.

“ July 1843. *Tin ore* from Maulmain purchased at 45 rupees per hundred viss, equal to 365 lb $\frac{1}{2}$.

	£.	s.	d.
45 Rs. per $\frac{1}{100}$ viss=per cwt. 14 rupees, or	0	28	0
<i>Charges.</i>	£.	s.	d.
Duty,	0	3	0
Stout boxes and shipping charges } in Maulmain, }	0	1	0
Freight home £ 2 per ton,	0	2	0
Insurance $2\frac{1}{2}\%$ on 40s.	0	1	0
Commission and London charges } $5\frac{1}{2}\%$ }	0	2	2
Interest commission 5% on purchase, }	0	1	2
			0 10 4
			0 38 4
Sale price per Mr. Bolitho,	0	46	0
Leaves a profit per cwt.	0	7	8

July 1843. *Tin* from Maulmain purchased at 77 rupees per hundred viss.

	£.	s.	d.
77 Rs. per $\frac{1}{100}$ viss.=23 Rs. 14 annas or per cwt.	0	47	9
<i>Charges.</i>	£.	s.	d.
Duty,	0	10	0
In Maulmain shipping, &c. per cwt. }	0	0	6
Insurance $2\frac{1}{2}\%$ or 6%	0	1	6
London charges, viz. commission $2\frac{1}{2}\%$ Ware-house and Dock dues $1\frac{1}{2}\%$ other incidental expences $1\frac{1}{2}\%$ }	0	3	3

<i>Interest on Purchase.</i>			£	s.	d.	£	s.	d.
Six months @ 5 per cent.	...		0	2	4			
Freight @ £ 3 per ton,	...	...	0	3	0	0	20	7
			<hr/>					
						0	68	4
Sale price per Mr. Bolitho,	...					0	56	0
						<hr/>		
Leaves a loss of per cwt.	...					0	12	4

Another calculation of November 1844.

	R.	A.	P.
Usual cost of tin in Maulmain, Rs. }	23	5	2
77-8 per 365 lbs., or Rs. ... }			per cwt.
Freight to England @ £ 1-10 per }	0	12	0
ton, ... }			
Duty, @ 10s. ... }	5	0	0
Shipping charges here and in Lon- }	0	8	0
don, ... }			
Commission in London @ £ 2½ }	0	13	0
per cent. ... }			
<hr/>			
			30 6 2
			<hr/>

	£.	s.	d.
Or, ...	0	60	9
Assumed price in London, ...	0	56	0
<hr/>			
Leaves a loss per cwt. of ...	0	4	9

"The assumed rate for the ore at Maulmain, 45 rupees per 365 lbs., would be I think subject to a reduction; but that for the metal, is probably the lowest average. It will be observed also, that the London price of 56s. per cwt. is taken at a period of great depression in the value of the article which had averaged 72s. per cwt.; but it would nevertheless appear, that to send it to England in the state of clean ore would be by far the safest investment."

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any mixed metal resembling tin
—as tin and zinc.

tinned iron plates.

ZINC.

In a broken boulder that a native brought me at Tavoy, was a large vein of some ore, that I judged to be black blende, or black sulphuret of zinc. I was never able however to ascertain the locality whence it was brought. Dr. Helfer reported the existence of ores of zinc on the Mergui Islands. He says : " The other ores discovered are of less importance. They are arsenic and zinc. The latter may contain some silver."

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MANGANESE.

Captain Tremenheere has given a full report on the manganese of Mergui, on the Tenasserim ; and I have seen specimens of manganese mixed with iron from one of the islands south of Mergui.

Captain Tremenheere wrote : " During my stay at the Tenasserim coal basin, a piece of manganese ore, (black wad), of good quality, was brought to me by a Karen, who stated, that it had been found accidentally in the bank of a stream called the Thuggoo, which enters the Great Tenasserim, seventeen miles below the coal site. Subsequently, several other pieces of the same ore were brought to Mr. T. A. Corbin, Assistant to the Commissioner from the Therabuen river, five miles above the Thuggoo, and from an intermediate spot, the locality of which had been previously known, and had been, I believe, originally pointed out by Lieutenant Glover of the Madras Army.

" In proceeding down the river, I visited these spots, and found at each, that a valuable bed of manganese ore existed close to the surface of the country. It had been apparently cut through by the action of the stream and river before mentioned, leaving a section of the bed of ore in their banks, covered only by the debris of the banks themselves. Large quantities might have been carried away, but a few hand specimens only were taken, which sufficiently shew the nature of the deposit, and are fair samples of what might be easily collected.

" Of the extent of these manganese beds it is difficult to pronounce. The face of the country in which they are

situated is flat, thickly overspread with soil, and with the densest jungle. It is not, as far I could perceive, intersected by many streams which would afford the means of tracing the mineral deposit. The Great Tenasserim river has passed through the manganese bed in one spot, $2\frac{1}{2}$ miles removed from two other points at which it occurs to the north and south, at both of which it is likewise discovered near the surface by the action of the streams Thuggoo and Therabuen. The probability therefore, is, that it is an horizontal deposit covering many square miles. But without indulging in conjecture, there is sufficient at the localities referred to, to indicate large quantities of manganese ore which could be collected by penetrating through the soil lying above it, and immediately near the spots in which it is now exposed to the day.

“ It occurs in the form of the black oxide, and is the manganese of commerce. It is largely consumed in Europe in the preparation of bleaching compounds, and when pure, is valuable to the manufacturer of glass.

“ The soft black ore, No. 1, is a hydrate of the peroxide of manganese, known under the name of wad. It contains of water two equivalents, or 29 per cent. Iron, 1.96 grains by analysis; its specific gravity is 1.47. The specific gravity of the grey peroxide, No. 4, is 1.46.”

MOLYBDENA.

Mr. Piddington, in analyzing the ores of antimony, found “ in one instance a trace of molybdena.”

ANTIMONY.

The sulphuret of antimony, appears to be a very abundant mineral in Province Amherst. It is reported as being often met with on the mountains, that bound the valley of the Thoungyeen, Mr. O'Riley found it at the sources of the Ataran, and large quantities of the ore have been dug up in the neighborhood of Maulmain; but there was no demand for it in Calcutta whither it was sent, and operations have been suspended.

Mr. Piddington made the following report on specimens of the ore that were sent him: “ We received

some time ago from Messrs. Fowle and Lonsdale of Maulmain, a box containing upwards of thirty specimens of Ores from the Antimony Mines near that place, with a request that they might be examined, their desire being of course to ascertain carefully and certainly, if they contained any, and what, proportion of the precious metals. One of the Ores sent up was indeed a 'supposed antimonial silver.'

"Now, in complicated ores of this description, this sort of examination requires great care, time, and often repeated analysis, before a negative can safely be pronounced from a small specimen, to assure the miner or smelter who works on a large scale that nothing of value exists in his ores, and these references have thus occupied a very considerable portion of time and labor, and as is often the case in such investigations, have proved wholly unfruitful. Antimony, iron, arsenic, and sulphur with bismuth, and in one instance a trace of molybdena being all which can be discovered in them. The results have been sent to Messrs. Brightman, but are not worth detailing or printing.

"I have suggested however, to these gentlemen that they may find it well worth their while to sink a shaft 'for a change of ores.' As I now understand their operations, they seem to be occupied with what one might call mere surface-digging rather than mining, and the pronouncing, as we must now do, that these ores contain nothing of value, is not to be understood as saying that the locality contains nothing, but merely that the ores *at the surface* have not been found valuable; which in Cornwall, and I think in Germany, is often thought to be a favorable indication."

ARSENIC.

Dr Helfer reported the existance of ores of arsenic on the Mergui Islands, Mr. Piddington found it in the antimony ores, and Professor Mitchell also found arsenic in the lead ore that he analyzed.

OXIDE OF ARSENIC.

This is the common arsenic of the shops, and is imported from Bengal.

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RED ORPIMENT.

Red orpiment, or realger, is found in great quantities in Burmah, and is constantly seen in the bazars.

Red sulphuret of arsenic.

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YELLOW ORPIMENT.

This is also a production imported from Burmah, which has not been found in the Provinces.

Yellow sulphuret of arsenic.

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TUNGSTEN.

The tungstate of iron, or wolfram sand, much resembles tin, and it is found in most neighborhoods where that ore is obtained, and for which it is often mistaken. One of the Assistant Commissioners at Mergui a few years ago, reported several valuable deposits of tin, not before known, and he raised furnaces on the ground to smelt the ore; but although he tried hard, and increased the heat to the highest point he was capable of doing; still the ore remained refractory, and would not turn into tin. He attributed the fault to his furnaces, and came away with large specimens of his tin ore, which proved on examination to be tungsten, or wolfram sand. A magnet will distinguish the two ores at once, for the iron in the tungstate of iron is attracted by the magnet, while the tin is not.

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COMBUSTIBLE MINERALS.

SULPHUR.

Sulphur exists in the ores that are found in the forms of sulphurets; as the sulphuret of iron, the sulphuret of antimony, the sulphuret of lead, and the sulphuret of copper; but native sulphur has not been found in the Provinces.

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DIAMOND.

Although the diamond is not found in Burmah yet it forms one of the nine gems, which worn together in a ring, are supposed to protect the wearer from evil. They are

နဝရတ်ဇွဲပါးနာယဉ်။	မိနီ။	<i>diamond,</i>
	မျှ။	<i>emerald,</i>
	သင်္ဂါ။	<i>coral,</i>
	နီလာ။	<i>sapphire,</i>
	ဥသပရး။	<i>topaz,</i>
	ဂေါ်မုတ်။	<i>pyrope,</i>
	ကော့ငါး။	<i>cat's-eye,</i>
	ပုလဲ။	<i>pearl,</i>
	ပတ္တမျှား။	<i>ruby.</i>

TREMENHEERITE.

According to the analysis of Mr. Piddington, Curator of the Museum of Economic Geology in Calcutta, these Provinces contain a new carbonaceous mineral, which he has named Tremeneheerite. In his report, he writes :

" This substance was sent to the Museum from Tenasserim by Captain Tremeneheere, as black wad, but it contains no trace of manganese.

" It is, when fresh, in masses of a scaly structure and of a deep black colour, with a highly metallic lustre, much resembling coarsely foliated graphite; after a few months it partly falls to powder, or rather into scaly flakes, evidently from the decomposition of pyrites, of which it contains three per cent. It powders easily, but the powder is always scaly, soiling, greasy, and glittering, like graphite. If the pulverised part be washed and ground, the tougher metallic looking scales remain as a black micaceous residuum, and it is only after long rubbing and washing that they also are pulverised, showing great toughness in the compacter and larger scales of the mineral. It soils much, but is too soft to mark with, nor can any very determined streak be made; what is so, is of a deep black. When heated a little sulphur sublimes; the mass burns but very slowly indeed, reddening only at first and for a long time like some varieties of graphite, and requiring a good supply of air to the crucible and constant stirring to effect its combustion.

" With patient attention the whole is burnt, with the exception of a small residuum of a very light, and bright fawn-coloured powder, which is a mixture of oxide of iron and silix.

Its composition is found to be in 100 parts.

Carbon,	...	...	...	85.70
Water and sulphur,	...	...	...	4.00
Peroxide iron,	...	...	...	2.50
Earth, chiefly silica,	...	...	...	7.50
				<hr/> 99.70
Water and loss,	...	...	...	30
				<hr/> 100.00

' This mineral then, differs from the anthracites in its high lustre, scaly structure, and ready pulverisation, by which it approaches the graphites; as well as by its iron and very slow combustion; but then from these it differs by its streak, and high combustibility with nitre; for, like coal and the anthracites, when projected upon melted nitre it deflagrates, heating the crucible instantly to redness, while the graphites not only boil but heat the crucible also, and

seem but partly and very slowly to part with their carbon till a much higher heat is given.

“ This distinction I have not yet found noticed in any chemical or mineralogical work, but it seems to me to be no bad test by which to separate the graphites from the anthracites ; namely, that with nitre, at a heat a little above its melting point only, the former melt and are consumed, while the latter, deflagrate and almost explode. My trials were made with graphite, from Borrowdale from Cochin, and from the Himalaya, all of which, as above stated, diffused themselves over the nitre and were consumed gradually, while Newcastle coal, American anthracite, and our present mineral deflagrate smartly.

“ It is usually taken, on the authority of Berzelius, founded on Karsten's researches, that the iron in graphite is a mere fortuitous mixture ; but Beudant acutely says, alluding to this, that ‘ when the iron is wanting we have no graphite, and when this substance is found in our furnaces, the proportions are sensibly the same,’ i. e. about 8 per cent. which he seems to think may be the true proportion. I do not advert to Kirwan's experiments, which were merely relating to coal, and not to coal and graphite in comparison with each other.

“ In Professor Vanuxem's experiments (Phil. Mag. for September 1845) the quantity of manganese and iron in anthracites is stated to be from 0·2 to 7·10 per cent. and the water from 4·90 to 6·70. In the graphites he found from 1·40 to 3·60 per cent. of oxide of iron and manganese in the pure, and 20·00 per cent. in the impure kinds ; and of water from 0·60 to 1·23 in the pure, and 5·33 per cent. in the impure kinds.

“ It may then be a mooted point to which of these two classes of the anthracinæ our mineral belongs, but as I have found nothing of the kind described before, I have given it a distinguishing name to be adopted or rejected, as better authorities shall determine.”

It appears to be an abundant mineral in the Provinces, there being several localities where it is found in the vicinity of both Tavoy and Maulmain. The Burmese often mistake it for coal.

ANTHRACITE.

No indications of bituminous coal have been found in Maulmain Province, but there is reason to believe that anthracite exists under the town of Maulmain itself. In digging a well on one of the Baptist Mission compounds, beneath several alternating beds of sandstone and slate, or shale, more than twenty feet below the surface, beds of carbonaceous matter were reached. One thin bed contained Tremmenheerite, which, from Mr. Piddington's analysis is nearly allied to anthracite.

Another thin stratum consisted principally of sand and carbonaceous matter, and similar beds are said to accompany the anthracite of America. Below this, is a stratum of shale and carbon containing fossil plants. One was decidedly an impression of a part of a leaf belonging to the palm tribe; and others unquestionably fern leaves such as indicate the anthracite coal formation in America. One of the ferns, and apparently the most numerous one, cannot be distinguished from specimens of *Neuropteris Scheuchzeri* from the anthracite coal mines of Rhode Island, and Massachusetts in my possession; and others bare a strong resemblance to *Neuropteris* and *Odontopteris* of the American anthracite coal fields that have been figured, but not described.

These are the only impressions of ferns that have ever been discovered in the Provinces; but from the bottom of a well deepened last dry season on the margin of the north west corner of Mr. Paterson's compound, an abundance of Tremmenheerite was brought up, and it is very probable that the fossiliferous strata are below it; though not the same as those on my compound, the inclination of the strata showing that they are above them.

I have also noticed indications of Tremmenheerite in the old piles of rocks brought up from a well within Mr. Paterson's grounds at the same corner; and from Mr. Hough's description it would seem that he came to similar strata at the bottom of his well.

MINERAL COAL.

The Mergui coal is regarded by the Coal Committee as true mineral coal, but of inferior quality. A similar coal is found on the banks of the Tenasserim north of the latitude of Tavoy; but Capt. Tremenheere regards both as superior varieties of lignite, and it is believed correctly.

"Lignite or brown coal," says Hitchcock, "appears to be peat which has long been buried in the earth, and has undergone certain chemical changes, whereby bitumen has been produced. Bituminous coal is probably the same substance, which has been longer buried in the earth, and has undergone still further changes." The coal of the great Tenasserim valley appears to have been so long buried in the earth, that the best parts of it are better than ordinary lignite and equal to the inferior portions of bituminous coal, which is true of beds of lignite in other parts of the world.

On the banks of the Little Tenasserim, coal of a superior quality is said to exist, and in that direction further examination ought to be made. Of that section of country I have no knowledge from personal observation, but the Coal Committee say: "Eighty miles from Mergui inexhaustible beds of coal of an uniformly good quality occur on the Thian Khan, one of the main branches of the Little Tenasserim. The various beds appear to be what is called cannel coal, remarkable for consisting of upwards of 50 per cent of bitumen, which, to use the words of Mr. James Princep, shews it to be a superior blazing material, which is the main point in getting up steam."

Coal has also been found on the banks of the Lenhea river, south of Mergui; but of this nothing is known. It is a field for examination.

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LIGNITE.

Lignite, or brown coal, has been found in several localities. On the banks of a small tributary of the Tenasserim, in about ten miles of latitude north of Tavoy, trunks of trees changed to lignite may be seen in the stiff clay,

and near them the trunks of other trees completely silicified, and turned to stone.

There is a great variety in this wood coal, both in its appearance and chemical analysis. Dr. Goodall, to whom I subjected specimens for analysis, wrote: "100 parts contain,

52 carbon,
29 bitumen,
19 ashes. •

100

The specimen was not good. Is it wood coal?" When Mr. Blundell saw several baskets of the coal that he had had brought in, he said it looked exactly like the first that was brought him from the Mergui coal field. This must be the coal referred to by the Coal Committee in their report for 1841, in which they say: "More recently, excellent specimens of coal have been presented to the Committee by Mr. Blundell, the Commissioner of these Provinces, as found somewhere on Tavoy river." No coal has been found on Tavoy river, and as this was the time when Mr. Blundell obtained the specimens of this lignite from the Tenasserim, there is doubtless an error in the reference to the locality. The Committee call it "Cannel coal," which only proves that lignite is sometimes "a perfect mineral coal;" for that this coal is lignite, no one will question who has visited the locality.

The Committee also reported on a specimen of coal from Maulmain as "Cannel coal," but Mr. O'Riley who visited the locality whence it was said to have been brought, says that if found in that neighbourhood, it must be lignite.

Dr. Morton recently furnished me with specimens of lignite collected by the commander of the surveying vessel on the coast, below Amherst. As the shore there for many miles is covered with laterite, it is probably found in that rock. Lignite occurs in laterite on the other coast.

Mr. O'Riley found lignite near the head waters of the Ataran. He says: "Approaching the head waters of the Ataran River where the strata are considerably elevated,

with the dip at an angle of 38° two separate lines of lignite occur in a coarse sandstone conglomerate with shale and a semi-indurated blue clay containing limestone pebbles. This lignite is highly pyritous, its decomposition affording a copious deposit of sulphate of iron which covers the exposed surface with a dirty-colored efflorescence. Some of the pieces taken from the deposit retain their original characteristics, do not fracture, and may be sawn through in sections across the grain, the same as wood imperfectly carbonized. Other deposits of wood less charged than the foregoing are found in the banks of the rivers Dahgyaine and Gyaine, some 20 to 30 miles to the north east of Maulmain, covered with the same blue clay as that already noticed, but none possess any useful quality as a combustible material."

PETROLEUM.

Petroleum is always for sale in the bazars, it is not however a production of the Provinces, but is imported from Burmah. At one locality near the banks of the Irrawaddy there are said to be more than five hundred productive wells.

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ထံနုးကျဲတံး၊

AMBER.

Amber, though universally used for ear knobs, is not found in the Provinces, but Dr. Bayfield described the amber mines that he visited north of Ava as being in a lignite formation. The amber, he said, was always found among the lignite; and, as there are numerous localities of lignite in these Provinces, some of them, if explored, might be found as rich in amber as they are in Burmah.

Succin.
Succinum.
ပရင်း

BOTANY.

Half a century ago, Dr. Buchanan, who accompanied Symes in his embassy to Ava, made a large collection of plants from the banks of the Irrawaddy. A dozen years afterwards, Felix Carey, an English missionary, collected many curious and new plants indigenous in Burmah, and sent them up to Roxburgh at the Botanical Garden near Calcutta, who described them in his "Flora Indica." After the Burmese war, Dr. Wallich visited this Coast and went with Crawford in his embassy to Ava; and his catalogue of plants collected on this visit contains 1650 species. Eight or ten years subsequent to Dr. Wallich's visit, Dr. Griffith came to the Coast, and during a residence of fourteen months collected specimens of 1700 species of plants, growing in these Provinces.

It is not probable then, that many conspicuous plants have escaped the notice of these indefatigable botanists; and yet, nothing was known of the pine until it was described in the Journal of the Asiatic Society, less than two years ago; and no work to which I can refer, mentions that very elegant flowering shrub, the nodding clerodendron in our indigenous flora, nor the large pink-flowered knotty cassia, nor the splendid orange-flowered butea, nor the white-flowered drooping barringtonia with its spikes a yard long, nor the fragrant recurved tabernaemontana, nor the curious gloriosa, nor the large blue-flowered thunbergia.

Our plants however, are better known than their properties. Wallich collected specimens of a species of blumia from Tavoy, and De Candolle described the species as *B. grandis*, but neither of them were aware that the weed produced an abundance of camphor, not inferior to the best camphor of the shops. Dr. Wight described

Pterocarpus Wallichii; but did not suspect that the exudation of the tree was good gum kino; and Dr. Griffith collected specimens of *Garcinia elliptica* with his own hand in the province of Mergui; and yet remained ignorant that the tree produced gamboge, which cannot be distinguished from the best gamboge of commerce.

When more attention has been paid to the geographical distribution of plants, the Tenasserim flora will probably show, that the climate of the plains on this Coast corresponds to one on the hills several thousand feet high on the other Coast.

Roxburgh says that a species of oak, *Quercus fenestra*, is a native of the mountains in the vicinity of Silhet; on this Coast the same species grows indigenous not fifty feet above the level of the sea. A gamboge tree, *Garcinia pictoria*, grows, he says, "on the highest parts of Wynaad," but the same tree grows at the foot of the hills in Tavoy, which border on tide waters. A species of willow, he describes as "a native of banks of rivulets and moist places among the Circar mountains," but we have a species of willow on this Coast which is met on every stream before the influences of the tide ceases to be felt. The chestnut, *Castanea indica*, he writes, "is a native of the hilly frontier of Bengal;" but the chestnut of this country, *Castanea martabanica*, grows nearly down to the sea shore. Speaking of the wood-oil trees, Dr. Wight remarks: "In this neighbourhood, Madras, several species are found, but all natives of hilly tracts forming the Balaghaut. In Pegu, where they abound, they occupy the plains." He refers all the species of *Vatica* to the mountains, but we have one that drops its curious winged fruit from cliffs that overhang the sea.

Ardesia humilis is a common shrub at Tavoy growing down to the plains; but its habitat on the other coast is "the eastern slopes of the Neilgheries in subalpine jungle."

Wrightea Wallichii, Wight states, is found on "the slope of the Neilgheries from about the middle of the ascent to the elevation of between 4000 and 5000 feet;" but "the original specimens of this species were collected in the Tenasserim Provinces."

Of the rose tribe, which includes the apples, cherries, and plums, Wight says there is not a single indigenous species on the plains of India, and that the species are "peculiarly extra tropical, a very few only being found within the tropics, and these at considerable elevations;" but on this Coast we have one indigenous species of *rubus* or bramble, another of *cerasus* or cherry, observed by Griffith; another of *pyrus* or pear, found by Wallich on the Irrawaddy, and if I am not mistaken I have seen a species of *pygeum* on a branch of the Tenasserim within a short distance of tide waters.

Many more similar facts could be easily put on record, but enough has been written, to prove that a sanatorium on Ox's Hump, a mountain four thousand feet high, fifteen miles east of Tavoy, would enjoy a climate corresponding to one six or seven thousand feet high on the other Coast. The path to its base is overshadowed by some of the most ornamental trees in the Provinces, and strown with many of our prettiest annuals, whose flowers baptize the breezes with their fragrance.

SELECT ORNAMENTAL TREES AND SHRUBS.

Perhaps no region in the world, of the same size contains a greater variety of ornamental trees and shrubs than the Tenasserim Provinces. The following selection of one hundred with a dozen palms is perhaps sufficiently numerous, yet it might be easily enlarged.

AMHERSTIA.

This is the finest indigenous tree in Chin India. It is of low stature, with slender pendulous branches clustered under its tufted summit of lively green, and draperied with large pea blossom shaped flowers of brilliant red and yellow, which hang down from its graceful arches in tassels more than a yard long.

It was discovered by Dr. Wallich on the Salwen near Trockla, and named by him after the Governor General's Lady—the Noble Amherstia. It has been introduced into England where every tree is said to be worth fifty pounds.

When one flowers, it produces quite a sensation from the Thames to the Tweed. Since the above was in type a botanical correspondent in the North of England writes : " I dont hear whether the *Amherstia* which flowered near London last year is going to do so again this, but doubtless it will, and we shall soon hear of it."

" Ho, Trockla ! thy tide
Hath a beautiful bride,
The child of an iris-wreathed shower ;
With valls flowing down
From her emerald crown,
Whose fringes unfold
In scarlet and gold,
A glorious sight,
Ever graceful and bright—
The Queen of proud Ava's wild bower.

Tall sweet-blossomed trees
Are wooing the breeze
O'er highland, and dingle, and glade,
But though they allure
With their fragrance so pure,
The *Amherstia* is fairest,
The noblest, the rarest ;
Nor all the rich flowers
Of Albion's bowers
Can vie with its purpling shade."

Amherstia nobilis.

သော်ကံး ဘုရား သိကံး

MESUA.

The mesua, which in Ceylon is called " iron wood tree," though not large, has an erect symetrical figure, whose deep evergreen foliage, flowing downward from its cone-shaped crest quite conceals its bowering branches, so that when covered with its rich blossoms, with ivory-white petals, and deep yellow stamens, it looks like the royal umbrella bespangled with gold ; and the Burmese say that their next Buddha, *Aree-ma-taya*, will enter the divine life while musing beneath its hallowed shades, hence it is a favorite tree with the priests who plant it around their monasteries. In Sanscrit it is called nagakeshura, and Sir William Jones remarks of it : " This tree is one of the most delightful on earth ; and the delicious odor of its blossoms justly gives them a place in the quiver of Camadeva, the Hindoo god of love."

• Ellen H. B. Mason.

To this Moore alludes in the following stanza:

"Then rapidly with foot as light
As the young trunk rose, out she flew
To cull each shining leaf that grew,
Beneath the moonlight's hallowing beams
For this enchanted wreath of dreams;
Anemones, and seas of gold,
And new-blown lilies of the river,
And those sweet flowrets that unfold
Their buds on Camadeva's quiver."

There are at least two different species in the Provinces, *M. pedunculata* and *M. ferrea*. Much confusion exists in our standard works on botany in relation to this last species. The *Mesua ferrea* of Roxburgh is the *M. Roxburghii* of Wight's Illustrations; the mesua tree of Calcutta, Serampore, and neighborhood.—The *M. ferrea* of Wight's Prodromus is the *M. coromandelina* of Wight's Icones, and Illustrations.—The *M. ferrea*, of Wight's Illustrations, is the *M. nagaka* of Gardener, the mesua tree of Ceylon; while the *M. ferrea* originally described by Linnaeus is *probably* the species found on this coast; but for the lack of books which contain the description of Linnaeus, it cannot be affirmed with certainty.

ကလိန္ဒာ ဘုရား သရက်

NODDING CLERODENDRON.

The Karen mountain glens of Tavoy and Mergui are embellished with one of the most elegant flowering shrubs that ever beautified a landscape—it is the nodding clerodendron. The flowers are tinged with rose, but nearly white, growing in long panicles at the extremities of the branches from which they make a graceful curve, and hang down perpendicularly from ten to fifteen inches, like an inverted cone, so that the soft greening foliage seems canopied with rosy-white veils. The flowerets are few, the divisions of the panicle being remote, and each bearing only three or five flowers. The divisions and subdivisions being all rectangular, and each blossom hanging from its pedicel like an ear drop, order and beauty are inseparable associations with this rare plant. It deserves a place in every conservatory, yet from London's Encyclopedia of plants before me, it had not reached England when that

was printed; and it is not in Wright and Eaton's Botany of North American plants, indigenous and cultivated. The shrub blooms in the dry season, and rarely exceeds in its native soil, more than ten feet in height.

Clerodendron nutans.

ငရဲပွဲ၊ ဖမာဝါး၊ ဖိတ်သံ၊

CHAMPAC.

The streets of our towns and villages are often shaded with the lofty distinguished champac, one of our few trees embalmed in song, of which the poet sings :

"The maid of India blest again, to hold
In her full lap the Champac's leaves of gold,
Thinks of the time when by the Ganges' flood
Her little playmates scattered many a bud
Upon her long dark hair."

The tree is in flower or fruit a great part of the year, and its rich orange blossoms, which are exquisitely fragrant, are also used by Burmese maidens to adorn their "long black hair."

It is the only representative we have on the Coast of that "Glory of America"—the magnolia tribe.

Michelia champaca.

ဝံကား၊ ဝံကား၊ မဂ္ဂါပု

တနီ၊ (Tavoy.)

ဖိနိတ်၊ ဆူးမိငါ၊

JONESIA.

When Dr. Wallich found the Amherstia, it was growing beside a Jonesia, and though it be but little diffused over our garden plots, yet its symetry, and numerous bunches of red and orange flowers certainly entitle it to companionship with that celebrated tree. Roxburgh says: "When this tree is in full blossom, I do not think the whole vegetable kingdom, affords a more beautiful object."

Gaudama, it is said, was born under this tree; and within the fall of its shadow, he delivered his first harangue. "At the instant of his birth," say the Burman sacred books, "he walked seven steps, and with a voice like the roaring of the king of lions he exclaimed. 'I am the

most excellent of men. I am the most famous of men. I am the most victorious of men."

Jonesia asoca.

KNOTTED CASSIA.

This species of cassia is remarkable for its large pink-colored flowers, and is seen tinting the Tavoy forests almost as beautifully as the calico tree does the steepes of the Apalachian Mountains. It is highly esteemed in Bengal, but I have seen no one cultivate it in these Provinces except Major Macfarquhar, and he told me his plants were sent him from the Botanical Garden near Calcutta !

Cathartocarpus nodosus.

Cassia nodosa.

နုဒိနီ ဗံ ဘျ. ကယိသု။

SWEET-FRUITED CASSIA.

"This tree," says Roxburgh, "is uncommonly beautiful when in flower, few surpassing it in the elegance of its numerous, long, pendulous racemes of large, bright yellow flowers, intermixed with the young lively green foliage." It bears a striking resemblance to the laburnum.

Cathartocarpus Fistula.

Cassia Fistula.

နုကြီး။ ဗံ ဒွါ. ကယိဝါ။

FLOWERY CASSIA.

Though not so handsome as either of the preceding species, the flowery cassia is extensively multiplied on this Coast. It is a slender, graceful tree, "every branch terminating in a large panicle of deep yellow blossoms;" and when several are clustered together, waving their radiant glories in the floods of a noon-tide sun, they look like illumined hills on the eve of a Burman Carnival.

Cassia florida.

ပဝေဝါ (Bur.) မုဒိနီ (Tavoy.)

ဗံဂါ. ဗံသေ။

MIMUSOPS.

A species of mimusops, a rare ornamental tree, is much valued by Burmese ladies for its small delicate sweet-scented blossoms, which they string in chaplets for the head.

Mimusops Elengi,

ခရာ" ခပ်ခါး ကးကုန်။

BUTEA.

There is a species of butea very abundant in Province Amherst which is a most magnificent tree. The Pwo Karens plant it in their sacred groves, where the deep rich orange blossoms seen under a tropic sun in the dry season enveloping their almost leafless trunks and branches, give the copse the appearance of a burning jungle. The Burman books describe the Himalaya forest, as shining with the flowers of the butea "like a flame of fire."

Butea frondosa,

ပေါက်" ဖာဘဝံခပ်. ဖိထိန်ကီးသွန်။

CREEPING BUTEA.

This is an immense creeper with flowers resembling the preceding species, and is not uncommon in the provinces of Tavoy and Mergui.

Butea superba.

ပေါက်နယ်" ဖာဘဝံခပ်သျှံဗျံ.

ဖိထိန်ကီးသွန်ဗိန်။

GUM KINO TREE.

The gum kino tree is a majestic evergreen, whose yellow papilionaceous flowers clustering amid the bright drooping foliage, scent the air, like the large magnolias, for several hundred yards around. It is propagated by simply planting large branches in the ground at the commencement of the rains. There are, however, two species, the red, and the white, as distinguished by Burmese—the red

producing the finest timber, but the white padouk is by far the finest ornamental tree.

Pterocarpus indicus.

ပတောက်ဖြူ၊ ချုံချုံ၊ ကျိကျိ

WHITE BAUHINIA.

This is a handsome shrub, with large blue-white flowers. It grows rapidly from seeds, and flowers in the second or third year.

Bauhinia acuminata.

မဟာလွေကားဖြူ၊ ဖောဖျံ၊ ခွေး၊ မိမိကဝံ၊ ဖိပုဂံ၊

PURPLE BAUHINIA.

When in blossom this is a very handsome tree, bearing large purple flowers.

Bauhinia variegata.

“ *purpurea.*

မဟာလွေကားနီ၊ ဖောဖျံဝဇာ၊ ဖိပုဂံ၊

YELLOW BAUHINIA.

This shrub bears a large sulphur-coloured flower, and the upper petal has usually a deep purple spot on the inside.

Bauhinia tomentosa.

မဟာလွေကားဝါ၊ ဖောဖျံ၊ ခွေး၊ ဖိပုဂံ၊

CREeping BAUHINIA.

There is a scandent species of bauhinia that creeps up to the tops of the highest trees which has very large leaves, and whose flowers have the fragrance of mignonette. It approaches Vahl's bauhinia in size and habit, but its petals are red and yellow, while in that they are said to be white. It is probably one of the species named by Wallich of which I have no description.

ခွယ်ဘတ်၊ ဖောဖျံ၊ ဘုံ၊ ဖိပုဂံ၊

ESCULAPIAN-ROD BAUHINIA.

I have never seen the flowers of this species but they are mentioned as small. The tree is remarkable for its contorted stem, and "it is said to have been," remarks Loudon, "the origin of Esculapius' snaken rod, which he brought from India."

Bauhinia scandens.

မြောက်လွေကီး၊ လိပ်ခိုင်ခါး၊

CHINA CHAMPAC.

This is a small South American tree, called by the Burmese, china champac, whose straggling, and often leafless branches shoot out from their extremities delicate orange-colored blossoms, tinged with red, and of sweetest fragrance.

Plumiera acuminata.

တရုတ်ခါး၊ သဘောခံကား၊ ဖရောမ္မာ၊ ဖိမိန်၊

GUM ARABIC TREE.

The pretty, tall shrub sometimes called gum arabic tree in Calcutta, though not the true gum arabic plant, is a favorite with the natives on this Coast, and it grows rapidly from seeds. The flowers are deep yellow, small, in globular heads, like the mimosa, and powerfully fragrant.

Vachellia Farnesiana.

ခိုလုံးခိုင်၊

QUEEN LAGERSTRÆMIA.

When cultivated in England the queen lagerstræmia is a small shrub, but here in its native soil it is a large timber tree, and when in flower is one of the most conspicuous trees in the Provinces. A tree in full blossom looks in the morning as if mantled with roses, but the flowers change through the day to a beautiful purple, making it appear at evening, if seen from a short distance, like a bower of English lilacs.

Lagerstræmia regina.

ရှင်မ၊ ခွ၊ သွ၊
ခမောင်ခို၊ (Tuvoy)

SMALL LAGERSTRÆMIA.

The Tavoy forests are adorned with a smaller species of *lagerstræmia* than the preceding, but the flowers are equally elegant and quite as large.

Lagerstræmia.

ခမောင်မြို့၊ ဇွဲခမာ၊ သွီခွါသွီခွါ။

INDIAN LAGERSTRÆMIA.

This is a small pretty shrub, common in gardens in Maulmain, and of easy cultivation.

Lagerstræmia indica.

HENNA TREE.

This is the camphire of the English Bible, and the cypress shrub of the Greeks and Romans. "The cypress plant," says Rosenmuller, "is held in particularly high esteem by the Greeks, the Arabs, and the Turks; and they think that they make an agreeable present when they offer a person a posy of its flowers. In reality, this plant is, as Sonnini observes, one of those which are particularly agreeable to the eye and the olfactory organs. The flowers, of which the coloring is so soft, spread the most delightful fragrance to a great distance, and fill with balsamic odour the gardens and rooms which they adorn." It is extensively cultivated by the Burmese, and hedges formed of it are common in Bengal.

The fresh leaves beat up with catechu,

—————"Imbue
The fingers ends with a bright roseate hue,
So bright that in the mirror's depth they seem
Like tips of coral branches in the stream."

This use of the leaves is as old as the Egyptian mummies, and is still practiced by Barman females.

Lawsonia alba.

" *inermis.*

ဝေ၊ သိုဝ္ဓာဝ္ဓာ၊ သုဂ်ဂါးစုဉ်း။
Mendi, (*Bengali.*)

H* /

SWEET SCENTED UVARIA.

Native cottages on the Coast are often overshadowed by the sweet uvaria, whose yellow-green petals almost blend their colouring with that of the leaves.

Uvaria odorata.

၀၁၆၄၆

GORDONIA.

A species of gordonia is a conspicuous tree in Maulmain. It belongs to the same family as the tea plant, and the camelias of which the japonicas are such favorites, and is a member of the same genus as the American loblolly bay, and Franklinia, to which the flower bears a strong resemblance. Wallich has named our tree the abundant flowering gordonia, but there is some difference between the Tavoy and Maulmain trees; whether enough however to constitute different species, is doubtful. The Maulmain tree has leaves precisely like *G. obtusa* "with shallow serratures;" but the leaves of the Tavoy tree are quite entire. The Burmese have different names for them.

Gordonia floribunda.

ဘန့်နီ

(Maulmain.)

သစ်ရာ

(Tavoy.)

ဗိုဂ်၁၂

ကယီသး

ORNAMENTAL DILLENIA.

When a stranger debarks at Maulmain in February, his attention is arrested by a tree without a leaf, but covered with large gaudy yellow flowers, it is the ornamental dillenia. Several other species of the genus are indigenous in the Provinces.

Dillenia ornata.

ဝဇ္ဇိနီ

ဗမ္မ

မိန့်

WHITE FLOWERED BARRINGTONIA.

There is a species of *barringtonia* in the Tavoy and Mergui jungles with drooping spikes of white flowers three or four feet long; and which would be much admired if introduced into the cities. The leaves are very large and lyre-shaped, and both flowers and foliage would contrast well with the other trees around it. The species is not described in any of the books to which I can refer.

Barringtonia.

ကျကြီး။

သညဉ်စုဉ်။

SCARLET FLOWERED BARRINGTONIA.

This tree bears long pendulous bunches of scarlet flowers, and is very abundant in the forests to which it is a great ornament.

Barringtonia acutangula.

ကျသား။

ခွံရံ။

ပတုဉ်။

ARABIAN JASMINE.

This jasmine is probably more universally cultivated than any other flower. The common double variety is more generally seen, but the single flowered, with a twining habit is not infrequent.

Jasminum Sambac.

ဝပယံ၊ ငလိ။

GREAT DOUBLE ARABIAN JASMINE.

The rich robed branches of this variety are studded all over like the snow-drop tree with lovely white flowers, the size of small roses, and delightfully fragrant.

Jasminum Sambac, plenum.

သင်္ဘောငလိ။

CATALONIAN, OR SPANISH JASMINE.

This is the most exquisitely fragrant species of the genus, and is very generally cultivated by both Burmans and Europeans.

Jasminum grandiflorum.

မြတ်လေး။

WILD JASMINE.

There is a wild climbing jasmine seen throughout the Provinces festooning the forests, and arching the pathways with its delicate flowers, like a wreath of snow flakes flung over the arms of a Canada spruce.

Jasminum syringæfolium.

သင်္ဃေ၊

TREE OF MOURNING.

The tree of mourning, sometimes called night-blooming flower, is as great a favorite in India as in the Southern States of America. Its delicate orange and white blossoms pour the most delicious fragrance on the evening air, and then fall in showers, bedewing the earth's cold bosom with sweetness

Nyctanthes Arbor tristis.

သိပ်ဘလ္လ၊

PERIWINKLE TREE.

This is a handsome shrub almost constantly covered with blossoms, that can scarcely be distinguished from the flowers of the rosy-periwinkle, though of a different genus. It was first discovered in Burmah, and Roxburgh, who introduced it into the Botanical Garden, said in his description : " The flower is like those of *Vinca rosea*, but larger and faintly fragrant ; it is in fact one of the most ornamental shrubs in the garden. "

Calpicarpum Roxburghii.

Cerbera fruticosa.

ဝလံ၊

ROSA.

The rose is quite naturalized on the Coast, and is one of the abundant flowers in the European gardens. It is cultivated by the natives also to a small extent, and the flowers sold in bazar.

Rosa.

ဒင်္ဂါ၊

ဖာရေဝေ၊

ဖိစားဆွါ၊

SWEET BRIAR.

Our English residences are often filled with sweet odours from the grateful eglantine, or sweet briar, but the plant is kept alive with difficulty when exposed to the south-west monsoon.

Rosa rubiginosa.

PERSIAN LILAC

This beautiful tree whose lilac clusters perfume alike the mansion of the American Planter, the saloon of the Frenchman, and the palace of the Syro-muhammedan is here also occasionally found shedding its sweetness around our Indian bungalows, and embellishing their environs. It is called in England the bead-tree, and in the United States the pride of China, or pride of India.

Melia azedarach.

ကမိခါ၊ ဓမ္မာသ၊ ကမာသိ။

INDIAN TRUMPET FLOWER.

The large terminal erect racemes of a species of bignonia or trumpet flower, are often seen near the dwellings of the natives; and its seeds are frequently noticed on account of the large membraneous wing with which they are surrounded.

Calosanthus indica.

Bignonia “

ကျောင့်ရှာ။ ဘုမ္မိဝေရ၊ မီးကပ်။

STIPULED TRUMPET FLOWER TREE.

A common flowering tree throughout the Provinces is a species of bignonia that bears a long twisted pod. It is common at Maulmain; and the flowers are often seen in bazar where they are sold for food. The tree enters the native materia medica as affording a cure for psora.

Bignonia stipulata.

Spathodea stipulata.

ဘက်သမ်၊ ချိ၊ စွန်။

FRAGRANT CALOPHYLLUM.

Near the Burman monasteries, a fragrant flowered species of calophyllum is occasionally seen in cultivation, and is a remarkably handsome tree. The beauty of the leaves has given name both to the genus and species—calophyllum, *handsome leaf*, and Inophyllum, *fibre leaf*, “because the middle nerve of the leaf seems to ramify into a multitude of fibres;” while the flowers are in elegant white bunches, and very sweet scented.

Calophyllum Inophyllum.

မုံညက်

ROYAL POINCIANA.

This gorgeous shrub which has been introduced from Madagascar into India, bears a most magnificent, and graceful flower; and as it flourishes well in these Provinces, if it were generally planted in our gardens, it would add much to their beauty.

Poinciana regia.

FLOWER FENCE.

This is a gaudy ever-flowering shrub planted in Barbadoes for hedges; it is much cultivated by the Burmese, and the variety with yellow blossoms is occasionally seen in their gardens. It belongs to the same genus as the preceding, and is sometimes called peacock's pride, and Spanish carnation.

Poinciana pulcherrima.

ဒေါင်းစုင်း၊ ဓဝဟိသီလာ၊ (Tavoy.)

DARK-PURPLE PONGAMIA.

This tree is very common about Maulmain and though vastly inferior to a multitude of others, Wallich thought it of sufficient beauty, to give it a place among his splendid engravings of rare Indian plants.

Pongamia atropurpurea

လွဲတညည်း၊ သင်္ဂတၢ်နီၤ

CLITORIA.

The clitoria, with its deep blue flowers, is seen tangled with other climbers wandering over trees, and arbors, in all parts of the country.

Clitoria ternatea

အောင်းပဲမြဲ၊ ဟဲ့ဟဲ့ဟဲ့၊ ဘိသိပ်ကဘိ၊

GARLAND TABERNÆMONTANA.

The foliage of this tree very beautifully contrasts with its large blue-white double flowers; which are often improperly called on this Coast, "wax flowers." The wax flower of Bengal is a trailing creeper, *Hoya carnosa*, which has been recently introduced into European gardens.

The single flowered variety is seen occasionally but not often.

Tabernæmontana coronaria, flora plena.

RECURVED TABERNÆMONTANA.

This is a low shrub indigenous about Maulmain, remarkable for its recurved peduncles and fragrant flowers.

Tabernæmontana recurva.

တောဝလံ၊

ALLAMANDA.

This is a climbing shrub, a native of South America, which produces a great profusion of yellow bell flowers. It differs in some respects from Voigt's description, and by some would perhaps be referred to a different species, but it accords very well with Lindley's in his *Flora Medica*.

Allamanda cathartica.

ဖရောင်းပန်၊

SCARLET CLERODENDRON.

The Burmese compounds are ornamented with this species of clerodendron, which bears a large cone of superb scarlet flowers, and, although said to be originally from China, it appears to be naturalized on this Coast.

Clerodendron squamatum.

မုကြိန်၊ ဖရားခွံ၊ မိက္ခိကန်၊

FRAGRANT CLERODENDRON.

In the most arid parts of the forests, during the hottest months of the dry season, the path of the traveller is perfumed by the fragrant flowers of a large leaved species of clerodendron. Major Macfarquhar sent specimens to the Agricultural and Horticultural Society of Calcutta a few years ago, but they were unable to determine the species satisfactorily.

Clerodendron.

မုကြီး၊ ဖာခွ၊ ကျဲ၊ ဖိက္ခိ၊ နိန်၊

DOUBLE FLOWERED CLERODENDRON.

The Burmese cultivate a fragrant double clerodendron, which appears to be a variety of the last species.

Clerodendron.

ဒုံ၊ နိန်၊ ဖာခွ၊ ဖာခွ၊ ဖိက္ခိ၊ နိန်၊

CHANGABLE LANTANA.

This straggling shrub appears to be quite naturalized in the neighborhood of Maulmain; though rarely seen in other parts of the Provinces. The flowers are yellow when they first open out, but afterwards change to a rose color.

Lantana nivea, mutabilis.

တရုတ်၊

CHASTE TREE.

This is a shrub much cultivated by the Burmans that bears a handsome little blue flower. Both leaves and flowers are "rather agreeably heavy scented."

Vitex trifolia.

ကြောင်ပန်၊

STROPHANTHUS.

There is a shrub about Amherst that bears a flower resembling the nerium, but with very long linear filaments to the end of each segment of the corolla. It is a species of strophanthus and well deserving of cultivation.

Strophanthus.

PICTURE PLANT.

The justicia, one variety of which has variegated leaves, and the other deep purple, is multiplied throughout the Provinces.

Graptophyllum hortense.

Justicia picta.

ငွေပန်း *variegated leaf.*

ကပူခိဉ်ထုလီဝါး “ ဤသျှလုံစုဒ္ဒါ. “

စလဝ်နီ *blood-red leaf.*

ကပူခိဉ်ထုလီဝါး “ ဤသျှလုံစုဝဒါ.

CAPE JASMINE.

Most Tenasserim gardens, as well as many European, and American, are graced with this tasteful shrub, which does not belong to the jasmine tribe, but is a species of gardenia. Its pure snowy blossoms, strongly fragrant, Loudon says, smell “ like the narcissus ; ” and they contrast delightfully with the thick deep green foliage in which they are set.

Gardenia florida.

သုဝ်ဆင့်ပန်း၊ ဖာရေဝံ၊ တကဉ်ဒါ။

GARLAND GARDENIA.

This is an indigenous tree, which produces a profusion of flowers that are white in the morning, when they first open out, but which, on exposure to the sun, become quite yellow.

Gardenia coronaria.

ရင်ခတ်၊ ဖာရေမ္ပ၊ တကဉ်မိ။

MUSSÆNDA.

A species of mussænda with corymbs of orange-colored flowers, and a single sepal expanded into a large white leaf, is not the least interesting shrub to the eye of the curious. In Calcutta an allied species is cultivated in the gardens, but its abundance in our forests prevents its introduction into European gardens on this Coast.

Mussænda Wallichii.

PSYCHOTRIA.

The genus psychotria furnishes a handsome shrub, whose small white flowers throw a delightful fragrance on the path during a morning walk.

Psychotria.

သဲဒီး (Sgau.)

CRIMSON IXORA.

This species of ixora is very common in front plots, and is sometimes called by the European residents, "the country geranium."

Ixora coccinea.

ပန်ဝိုင်း၊ ဖာရော့၊ ဒီထံပုန်၊

WILD IXORA.

An indigenous species of ixora is frequently met with in mountains and plains whose flowers are of a much paler hue than the preceding species.

Ixora pallens?

တာပန်ဝိုင်း၊ ဖာရော့၊ ဒီထံ၊

WHITE IXORA.

A white-flowered ixora is another of our wild flowers that ought to be brought into cultivation.

Ixora alba.

PAVETTA.

An indigenous species of pavetta, with flowers resembling a white ixora is found at Tavoy.

Pavetta tomentosa.

ယွန်ဝိုင်း (Sgau.)

NAUCLEA.

A fragrant orange-flowered species of nauclea is sometimes cultivated by the natives. Its large glossy leaves afford a thick and beautiful shade; and, in Indian Mythology, it is one of the four shadow-giving trees that grow on mount meru—the eugenia, the nauclea cadamba, the banyan, and the peepul.

Nauclea Cadamba.

ပာဏ၊ ဝေ၊ သဲဒီး၊

HEDYOTIS.

An attractive purple-flowered shrub, a species of hedyotis is multiplied in some sections of the country.

Hedyotis.

SAMADERA.

The low grounds near the sea coast are ornamented with a handsome shrub which is a species of samadera, and bears a rather curious flower. Like the quassia of the same tribe, its leaves are most intensely bitter, and may perhaps possess the virtues of quassia. Wight says it is cultivated in the gardens about Batavia; but I have never seen it out of its native jungles on this Coast.

Samadera lucida.

ကသဲ၊ ကသဲဖို၊

THREE-LEAVED CAPER.

The three-leaved caper tree produces large handsome terminal heads of flowers with numerous purple stamens and white clawed petals that change to cream color.

Cratava Roxburghii.

Capparis trifoliata.

ကတက်၊ ကထပ်၊ ဟိန်ထေး၊

SHOE FLOWER.

This bold, flaming flower is extensively cultivated, and is a very good substitute for "Day and Martin's blacking."

Hibiscus Rosa sinensis.

ခေါင်ရင်း၊

CHANGABLE HIBISCUS.

The double rose hibiscus whose white flowers deepen into red, are sometimes seen in the front plots of European residences.

Hibiscus mutabilis.

POPLAR HIBISCUS.

A yellow-flowered species has been introduced from the Madras Coast, which is quite an ornamental tree.

Linnaeus very appropriately named it the poplar hibiscus, for it has the leaves of the poplar with the flower of the hibiscus.

Thespesia populnea.

Hibiscus populneus.

TORTUOUS HIBISCUS.

The banks of our tide-water streams are often damasked with the changable red and yellow flowers of this large luxuriant bush, whose crooked wandering branches, crossed and locked with each other, spread along the ground heaping the earth with its evergreen foliage.

Paritium tiliaceum.

Hibiscus tiliaceus.

လည်ညာရှင်၊ သင်ပန်၊ ဘွဲ့ဘို၊ ဆိုင်ထံ။

FRAGRANT SCREWPIKE.

The male flowers of the fragrant pandanus or screw-pine, are exceedingly fragrant, and great favourites with the Burmese. The palm-like shrub that bears them, dropping roots from its branches, like the banyan, is a very curious plant, and not inelegant.

Pandanus odoratissimus.

ဆင်ဆွား၊ ဆင်ဆွာ၊ ဟျံ၊ ဟျံ၊ ဆေးဆွင့်၊

SWEET-SCENTED OLEANDER.

This well known fragrant flower adorns a few of the gardens in Maulmain, but it has not yet come into general cultivation.

Nerium odorum.

SCARLET NERIUM.

European compounds are occasionally scented with this useful shrub, whose orange-red flowers have the grateful fragrance of the pine apple.

Wrightia coccinea.

Nerium. “

LAUREL-LEAVED PASSION FLOWER.

Numerous species of passion flower are seen wandering over the arbors and trellises of our sunny greens, but none

exceed in beauty, and fragrance the laurel-leaved passion flower, called in the West Indies, water lemon vine, which appears to have been the first of the tribe introduced into Burmah.

Passiflora laurifolia.

အသံသဝင်္ဂါ

FÆTID PASSION FLOWER.

A species of passion flower with fætid flowers, but very elegant moss-like involucres, though rarely noticed in gardens, may be often seen creeping over the hedges in Maulmain like an indigenous plant.

Passiflora fætida.

MUSK PLANT.

One of the most gaudy flowering shrubs in the country is the musk plant, whose large yellow blossoms with blood colored eyes are sometimes seen bedecking European grounds, and whose seeds have been said to be an antidote to snake bites.

Abelmoschus moschatus.

ဘလုလင်ဂါ၊ ဝဲဒီးမုမ္မာ၊ ဘဲဆံဉ်မုး

ELÆOCARPUS.

At Maulmain there is seen a small tree whose handsome summit is whitened over with a profusion of white flowers, it is a species of elæocarpus, the genus which furnishes by its tuberculed seeds, beads for the Hindoo Fakereers.

Elæocarpus longifolius.

ဝါဆိုဝဲနီး

MONOCERA.

In the southern provinces there is a species of monocera which bears flowers similar to the elæocarpus.

Monocera Griffithii.

မိဂီ၊ ထဉ်ဆာထံ

ARDISIA.

There are two or more indigenous species of ardisia that are handsome flowering shrubs. One, *A. humilis*, I saw in Dr. Carey's garden at Serampore, and another I have seen in European grounds on the Coast.

Ardisia humilis.

" *Amherstiana*

ကျက်မအုတ်၊ လှေဆံ့ချာ၊ ထွန်ခိဉ်း

ROUREA.

The rourea abounds in the environs of Tavoy, where the air is often filled with fragrance from its thick snow-white flowers.

Rourea Sookurthoontee.

Cnestis monadelpha.

တလိတိ၊ ဇာဘျီဖဝံ၊ ဆီခါခါထဲ၊

MEMECYLON.

A small blue-flowered species of memecylon bearing its flowers in compound corymbs, which contrast favourably with its shining green leaves, is interesting to the florist in this country, where blue flowers are so rare.

Memecylon tinctorium.

မြင်းချေတညက်၊ တိဉ်းဒီးသု၊

GREWIA.

Perhaps there is no tree more generally diffused throughout the Provinces than a species of *grewia*, whose terminal bunches of flowers may be seen on almost every knoll in the country.

Grewia.

မြတ်ယာ၊ မြင်းတဘက်၊ (Tavoy.)

ဗျံ၊ ထီးပျံ၊

COMBRETUM.

A fragrant flowered species of *combretum* is common on the hills near Maulmain.—A straggling shrub, with winged fruit.

Combretum Wightiana.

CONGEA.

In the neighborhood of Maulmain and Amherst, but rarely in the southern provinces, the forest scenery is often ornamented with the numerous large purple bracts surrounding the small inconspicuous flowers of a species of congea. In the distance it bears a strong resemblance to the dogwood tree of the Ohio valley when in flower. There are three different species in the Provinces, but they are all called by the same native names.

Congea azurca.

" *tomentosa.*

" *velutina.*

ကယော၊ ကယာ၊

CEYLONESE NARAVELIA.

In the southern provinces a handsome flowered climbing plant of the genus naravelia, belonging to the ranunculus tribe, is occasionally seen.

Naravelia zeylanica.

VIRGIN'S BOWER.

Griffith says there is one species of this northern genus in the Provinces "with simple fleshy leaves."

Clematis.

PRICKLY PEAR.

The hedge prickly pear is often seen in gardens, and its large yellow flowers are quite ornamental. The natives regard it as a species of euphorbia.

Opuntia Dillenii.

Cactus indicus.

ရှားစောင်းလက်ညှိုး၊ ရှားစောင်းလက်ဝါး

မေ့၊ ဂွမ်း၊ ထိန်ခွံခွံနီနီ

WEeping SONNERATIA.

There is a species of sonneratia in the low wet lands near the mouths of some of the rivers, well deserving of a place in our cities. It bears a strong resemblance to the

weeping willow and is one of the most graceful trees in the country. The casuarina has been removed from the coast to our compounds, and the sonneratia is quite as deserving.

Sonneratia apetala.

ကပ်လဝ်.

DRAGON TREE.

Two or more species of the dragon tree, resembling small areca palms are seen in Burmese compounds, but the most common is the one with dark purple leaves.

Dracæna atropurpurea.

ကွပ်လင်း. ဗဒုံ ကယံ.

FRAGRANT MORINDA.

The most agreeably fragrant flowered shrub with which I ever met in the Karen forests, is a species of morinda, that has not yet found its way into cultivation. The flowers are small, in dense heads, like other members of the genus, azure purple externally, but white within; and have only four anthers, like a species described by Jack which he found on the Malay Islands.

Morinda.

FRAGRANT LIMONIA.

On all the lands near the mouths of the rivers that are occasionally overflowed by tide waters, a very handsome shrub of the orange family, with a fragrant white flower, and a small fruit like a lemon in miniature, is quite common; and ought to have a place in our garden plots.

Limonia.

VARIEGATED CROTON.

This shrub with handsome variegated leaves is sometimes seen in gardens.

Codiaeum chrysosticton.

Croton variegatum.

CORAL PLANT.

Though a native of America, the coral plant, with its brilliant carmine corymbs is considerably diffused in Maulmain grounds.

Jatropha multifida.

BOJER'S EUPHORBIA.

This large scarlet-flowered species of euphorbia from Madagascar is very common in gardens.

Euphorbia Bojerii.

POINSETTIA.

This plant has been recently introduced into the gardens in Maulmain; and its large vermillion-colored floral leaves render it, when in flower, a very ornamental plant.

Poinsettia pulcherrima.

RANGOON CREEPER.

This elegant scandent shrub is seen trailing its long arms around our bowers and verandahs, buried in thick lively foliage, and gracefully flinging out its thousands of sweet-scented flowers which change their tint from white to rose, and with the clouds at sunset, deepen into richest crimson.

Quisqualis indica

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FRAGRANT PERGULARIA.

In the gardens in Maulmain, this fragrant flowered creeper is often cultivated.

Pergularia odoratissima.

MALPIGHIA.

A handsome shrub of the genus malpighia, with leaves like the holly, and nearly related to the Barbadoes cherry, is occasionally cultivated in European gardens.

Malpighia heteranthera.

ÆGICERAS.

This large shrub when in bloom is covered with small white flowers, which seem to have great attractions for the

fire-flies. In moving up the streams near the sea-board on a dark night, these trees are often seen illumined with myriads of waving brightening wings :

“Retreating, chasing, sinking, soaring,
The darkness of the copse exploring,”

And making them look in the deep gloom, like superb candelabra hung with living lamps.

Ægiceras fragrans ?

ဘူတရပ်

နီကိရုံ

HANDSOME URANIA.

The yard of a Burmese merchant in Tavoy, is often visited by Europeans to look at what is deemed the most curious tree in the Provinces. It is frequently amusing to listen to the observations of the spectators that may not unfrequently be seen gathered around it on a fine evening. “It is a kind of a palm,” says one, “do you not see that its trunk is precisely that of a palm?” This settles the question so long as the eyes are kept on the trunk ; but another looks up and cries out, “No such thing ! Look at its leaves. They cannot be distinguished from the leaves of a plantain tree.” It belongs to the natural family of the plantain, but it has the trunk of a palm, and the leaves are not arranged around the stem like those of the plantain, but in two opposite rows, so that the whole head has the form of a gigantic fan. It is the only tree of the species that I have seen on the Coast, and it was brought up by its owner from Penang. It is well worthy of cultivation for a curiosity.

Ravenala madagascariensis.

Urania speciosa.

CASUARINA.

The casuarinas, called beef-woods, form imposing bowers, and are the very pictures of drooping beauty. There is but one species indigenous to this Coast, which is the one that has been diffused over Bengal, but the species introduced into England is the one common to the Indian Archipelago, and the South Sea Islands, called in the latter place ironwood. The wood is very hard and durable, and the Tahitians in their war-days chose it for the

manufacture of their formidable, ingeniously carved war-clubs, hence they term it the club-wood. They also fashioned valuable fishing hooks from its roots. The casuarina of our Provinces is found inhabiting only the loose, sandy soil of the sea-board, and never inland. In general outline it resembles the pine, but it is of a more slender figure, and more elegant in appearance. It is a remarkable tree, growing eighty feet high, and spreading out without a leaf of covering; but its numerous fine knotted branchlets, mantled with brilliant green, and hanging in drooping bunches, or floating out lightly upon the breeze like long skeins of green silk, adorn it with the most graceful drapery; and make it one of the most desirable trees for embellishing a Tenasserim park.

Casuarina muricata.

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TENASSERIM BANYAN.

Few persons are aware that we have a species of ficus in the Provinces which has the habit of dropping roots from its branches that root in the ground, and become trunks as large as the parent tree, to an extent nearly equal to the famous banyan. It escapes notice because it develops itself in the greatest perfection near the mangrove swamps, and some who see it call it a mangrove; and it never grows spontaneously except on the banks of tide water streams. It is not found however, in the mangrove lands which are under water every tide, but above that belt where heritiera trees, and their associates show themselves, on land that is inundated by the spring tides only. Specimens are seen farther toward the interior, as on the banks of the Gyaine, but on the low banks near the sea between Tavoy and Mergui, the trees often form labyrinths from which I have more than once found it difficult to extricate myself. It is rather remarkable that the tree has never been introduced into our towns, where it would be quite an ornament to the sides of our public walks. In a few instances I have seen the tree planted on high ground, one at a village near the sea-coast west of Tavoy, where it appears to grow very well. A very nearly allied species Wight says, is "much used as

an avenue tree " in southern India. Perhaps our tree will be referred to the same species, *F. Benjamina* ; but though much resembling it, there is still a difference that appears to be constant, and therefore specific. The *Benjamina* has the fruit smooth on short stems, while the Tenasserim tree has rough fruit and stemless. There is a difference too in the leaves, but it is only slight, and not alone sufficient to establish a species. Wight, in uniting *F. nitida* with *F. Benjamina*, characterizes the united species thus :

" *Ficus Benjamina*, Leaves oval and obovate, obtuse, polished : fruit axillary, paired, smooth."

The Tenasserim tree may be thus characterized :

Ficus Benjaminoides. Leaves oval, suddenly acuminate, smooth, polished above ; fruit axillary, paired, sessile, rough.

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ချပ်ပုံ၊ ချပ်ပုံ၊ ချပ်ပုံ၊ ချပ်ပုံ၊

ASPEN-LEAVED PEEPUL.

The peepul is quite an ornamental tree but very scarce in these Provinces, though usually supposed to be one of the most abundant. The peepul of the residents, but not of the Burmese who recognize the distinction, is an allied but different species of ficus. It is the most sacred of trees with the Buddhists, for it was under this tree that Gaudama slept, and dreamed that his bed was the vast earth, and the Himalaya mountains his pillow, while his left arm reached to the eastern ocean, his right to the western ocean, and his feet to the great south sea. This dream he interpreted to mean that he would soon become a Buddha ; and it was while seated beneath the same tree, that his dream was verified.—He vanquished the forces of Mara,* the Indian Cupid, and became divine.

Ficus religiosa.

ညောင်ဗောဓိ၊ ဗောဓိ၊ ပညောင်၊ ညောင်ဗုဒ္ဓဟေ၊
ချပ်ပုံ၊ ချပ်ပုံ၊ ချပ်ပုံ၊ ချပ်ပုံ၊

*မာရ်နတ်။

HEART-LEAVED FIG.

This is the tree which usually supplies the place of the peepul in the public places, and in the neighborhood of religious edifices. "It approaches," says Roxburgh, "nearest to *F. religiosa*, of any species I know, yet it is easily distinguished from it by the leaves being narrower in proportion to the length, with much shorter points, and instead of the lobes forming a sinus at the base there is a small degree of projection at the insertion of the petiole. And in the second place by the fruit being perfectly round and not, as in *religiosa*, vertically compressed."

Ficus cordifolia.

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CYCAS.

There is a very ornamental species of cycas in the Karen forests resembling a low palm, but which has never yet been introduced around our European seats.

Cycas circinalis. ?

မုလိင်၊ ဓဇဝါ၊ ကာ၊

PALMYRA PALM.

The palms undoubtedly constitute the noblest tribe of plants in the whole vegetable kingdom ; and there is a large number of species indigenous, and cultivated in the Provinces. Excepting the areca and cocoanut, the palmyra palm, is more generally diffused than any other.

Borassus flabelliformis.

ထမ်း၊ ဂ၊ ထိဒါ၊

WILD PALMYRA.

The Provinces yield an indigenous palm which the natives call the wild palmyra. It has the fruit of the palmyra, but the leaf differs from it sufficiently to constitute it another species.

Borassus.

တောထမ်း၊ ဂမာ၊ ထိမ်းပွင့်ရွှင်၊

TALIPAT OR LARGE FAN-PALM.

Griffith met with trees in flower at Mergui, which he thought belonged to this species, but "not having access to a complete copy of Martius' Palms," he could not speak with certainty. For the same reason, other trees that I saw in Tavoy, must be stated as probably talipat palms.

Corypha umbraculifera.

ပေး ချလ. ပွင့်

BOOK PALM.

Specimens of the palm, the leaves of which are commonly used to write on instead of paper, are not infrequent in the neighborhood of religious edifices. I think there are two species in the Provinces.

Corypha Taliera.

" *elata.*

ပေး ချလ. ပွင့်

DATE PALM.

I have seen young date trees raised from the seeds of the dried dates that are imported, and there is no apparent reason why the tree might not be cultivated.

Phoenix dactylifera.

စွန်ပွန်၊ စမုပ၊စု၊ မိန်ပလိန်၊ မိုန်ကျိန်ခံ၊

WILD DATE PALM.

Capt. Phayre informed me that he saw a wild date palm near one of the kyongs in Amherst province ; but though so abundant on the Hoogly, this is the only one I ever heard of in the Provinces.

Phœnix sylvestris.

THE MARSH-DATE PALM.

On the low islands in the rivers, and on the shores which are inundated with the highest tides, the marsh-date palm abounds, a small tree about twenty feet high, no thicker than a walking cane ; whose fruit looks precisely like a bunch of dates, but it is not edible.

Griffith says : " It is well worth cultivating on account of its elegance, and its being adapted for bank scenery. "

Phœnix paludosa.

သင်ဘောင်း တလုမ်း (Tavoy.)
 ဟာခါဝ်း. ဘိသလူးဘိသလူးဘိကလဲး

WILD PALM.

There is a large stately palm very abundant in the Karen jungles, the leaves of which the Karens use for thatch.

Livistona.

ထင်မြောက်လု လံ့. လိပ်.

KAREN CABBAGE PALM.

A wild palm is found in many parts of the Provinces, which the Karens often cut down for the unexpanded bunches of young leaves found in its summit, and which has the taste of cabbage. The tree does not however, belong to the same genus as the cabbage tree of America, but from the imperfect specimens of its fructification that I have seen, appears nearly related to Griffith's genus,

Macrocladus.

ရင်ချင်းချောင်း ဝဟ လိပ်.

WALKING-CANE PALM.

The islands of the Mergui Archipelago yield a small palm, the stems of which are used for walking-sticks, like "Penang Lawyers"; and is probably a species of the same genus that produces those famous canes.

Licuala. ?

STEMLESS LICUALA.

This is a nearly stemless palm described by Griffith as remarkable for its dark green foliage. He met with it in the forests south of Mergui.

Licuala longipes.

TREE RATAN.

An arboreas species of ratan common in the jungles, Griffith justly terms : " a very elegant palm."

Calamus arborescens.

ကျိပ် လဲ ဝှံး

RATAN SAGO PALM.

The sago palm has not been discovered in these Provinces, but Griffith describes a palm from the Mergui Islands, which he named the ratan sago palm. " It appears," he says, " to be osculant, between calamus, sagus, and zalacca, having the habit of the former, the inflorescence of the second, and in some measure the seed of the last genus;" so that while it resembles a ratan, it has flowers like the sago palm.

Calamosagus laciniæus.

BETEL PALMS.

The palm which produces the betelnut is extensively cultivated by the Burmese, and to a small extent by the Karens. It thrives luxuriantly on our Coast, and a grove of betel palms, with their slender, cylindrical stems peering fifty or sixty feet upward, waving their green plumes, and fragrant flowers, presents a scene of sylvan beauty rarely to be excelled under our tropic sky.

" Thus winds our path through many a bower
Of fragrant tree and giant flower—
While o'er the brake so wild and fair
The betel waves his crest in air ;
Yet who in Indian bowers has stood
But thought on England's ' good greenwood ;'
And blessed beneath her palmy shade
The hazel and her hawthorn glade ;
And breathed a prayer, (how oft in vain !)
To gaze upon her oaks again."

Areca Catechu.

ကွပ်သီး ဝှံး သီး

SELECT ORAMENTAL HERBACEOUS PLANTS.

The number of annuals and herbaceous flowering plants in the Provinces, though considerable, is not proportionate to the number of trees and shrubs. For the accompanying notices, I have selected fifty of those possessing most interest to the florist.

ELEGANT KÆMPFERA.

Under every shady tree in Maulmain may be seen during the rains, a pretty little pink flower resting on broad green leaves, which Wallich appropriately named "the elegant kœmpfera." Though so abundant at Maulmain, it is scarcely seen in the southern provinces.

Monolophus elegans.

Kæmpfera elegans.

ကွမ်ကဝ်း

WHITE KÆMPFERA.

During the dry season, a white-flowered species of kœmpfera with a yellowish limb, is often seen lifting its crocus-like flowers without a single leaf, on the most arid spots in the jungles.

Kæmpfera candida.

ပန်းဥခြံ

FRAGRANT KÆMPFERA.

This is the finest species of the genus, and is cultivated by amateurs for its beautiful sweet-scented blossomes. A nearly related species is indigenous in the Karen jungles.

Kæmpfera rotunda.

မြပန်းတောက်၊ ဖာတံဝံ၊ မိဝံခံခံ၊ မိရံခံခံ၊

MELASTOMA.

A species of melastoma with large gaudy purple petals, and long yellow stamens, is a common weed. Its calyx opens like a lid, and bears a fruit which in taste and flavour strongly resembles the blackberry of temperate

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regions. In Bengal the same plant is cultivated as a garden flower, but it does not compare with our wild plant.

Melastoma malabathricum.

မုန့်ပျံ၊ ဘို၊ ဘာ၊ ဘျာ၊ ထံပိတ်း။

OSBECKIA.

A pretty species of osbeckia having the general appearance of the above, except that the stamens are all of equal length, is in flower on the Maulmain hills in August.

Osbeckia.

SONERILA.

Perhaps the prettiest little annual in the neighborhood of Tavoy is a species of sonerila. Its bright purple blossoms peeping up in the grass attract the attention of the most casual observer.

Sonerila.

ခံပူလူ၊ (Sgau.)

CAREY'S GLOBBA.

On shady banks in these Provinces where violets are seen in England, the pretty orange-flowered globba is not uncommon.

Globba Careyana.

GLORIOSA.

One of the most curious flowers in the country is the gloriosa. "Gloriosa," says Loudon, "on account of the glorious colours of its flowers, and the elegance of their form. This is a splendid and curious genus." The flower, as large as a lily, hangs down, and the petals stamens and style all turn and grow up like a flower turned inside out. Then to complete the oddity, the leaves prolong their extremities into tendrils, and the plant walks on its toes.

Gloriosa superba.

ဆိမ့်တောကိ။

TUBEROSE.

"The tuberose with her silvery light," a plant of the lily tribe, which has been introduced into India from Mexico or South America, is cultivated very extensively by the Burmans and in many English gardens. The flower has a delightful fragrance, and throws out its odours strongest at evening.

Polianthes tuberosa.

နှင်းပင်း ဖိပ်ခါး

GARLAND FLOWER.

The garland flower, a species of *hedychium*, but regarded by Europeans as a lily, is much cultivated by both natives and foreigners. The yellow and white varieties are both common. "This to me," says Roxburgh, "is the most charming of all the plants of this natural order that I have met with, the great length of time it continues to throw out a profusion of large, beautiful, fragrant blossoms, makes it particularly desirable."

Hedychium coronarium.

လင်သေး၊ ဖုံပေါင်လှေခွံ၊ မိန်ရှင်ဖိန်ခိန်၊
မိန်လီခွန်

NARROW PETALLED GARLAND FLOWER.

A very fragrant species of *hedychium* with long narrow petals, and an epiphytic habit is often seen in Tavoy. The species is not described in any books to which I have access.

Hedychium.

သစ်ခက်လင်သေး၊ ဖုံပေါင်လှေခွံ၊ မိန်ရှင်သုန်ခိန်

WATER LILY.

Griffith says, there are two different species of water lily in the Provinces.

Nymphaea.

ကျား ခရု တက်

SACRED BEAN PLANT.

The flower of this plant being much like a water lily, it is usually regarded as one, but the fruit is so different that botanists have placed them in different natural families.

Nelumbium speciosum.

ကျာ။ ဘဝဇာ။ တက်။

ORNAMENTAL CRINUM.

We have no lilies in the country, but they are well represented by the crinums, which Europeans usually denominate lilies. A very large petalled species, of which there are two varieties is much cultivated in gardens, and is quite an interesting plant.

Crinum ornatum.

ပဒိုင်း။ ဖခာဗာ။ ဖိဒုဂ်ညါ။

LARGE FRUITED CRINUM.

There are two gigantic species of crinum indigenous in the low grounds near the sea coast, one of which is the large fruited crinum, and the other, which is nearly related to it, bears a large bunch of fragrant flowers and has been recently introduced into our gardens.

Crinum macrocarpon.

ပဒိုင်းကြီး။ ဖခာဗာယံဝံ။ ဖိဒုဂ်ညါဝေးဒိဂ်။

WATER CRINUM.

Many of the clear mountain streams, where they rest their waters in little crystal lakes, are covered with a fragrant and beautiful species of crinum with long narrow leaves.

Crinum.

ရေပဒိုင်း။ ဖခာဗာဘုံ။ ဖိဒုဂ်ညါထံ။

TIGER LILY.

A showy yellow and orange flower, whose petals are spotted like a leopard's skin, and belonging to the iris

tribe, is very commonly cultivated by the Burmese as well as by Europeans.

Pardanthus chinensis.

သင်္ဘော

EURYCLES.

A fragrant white flowering bulb of the amaryllis tribe, and of the genus eurycles, is not uncommon in native gardens.

Eurycles amboinensis.

လမင်း၊ နေမင်း၊ ပုဂံသား

ZEPHYRANTHES.

One or two species of zephyranthes of the amaryllis tribe which I introduced from Dr. Carey's garden at Serampore grow very well, and form handsome border flowers.

Zephyranthes tubispatha.

GLOBE AMARANTHUS.

The globe amaranthus is often cultivated by Karens and Burmans, as well as by Europeans.

Gomphrena globosa.

မညိုးပန်း၊ မိမိပု၊ မိတူး

COCK'S COMB.

This common annual all over the world, is often seen in European gardens; and is sometimes cultivated by the natives. The Burman name signifies cock's comb, like the English.

Celosia cristata.

ကြက်မောက်၊ မိမိဘိဉ်မိဉ်

PRINCE'S FEATHER.

This is the most elegant plant, when cultivated by the Karens, that I ever saw of the amaranth tribe. It is not the prince's feather of English writers *Amaranthus hypochondriacus*, but a species of celosia which bears a long pendulous drooping panicle or plume like Roxburgh's *C.*

cennua, but it is a different species. There are two varieties, one with bright yellow flowers, the other with red.

Celosia.

ကြက်ဝက်ဝါး၊ ဖရားဟု. (*flower yellow.*) ဖိဘိ.

ကြက်ဝက်နီ၊ ဖရားဝရား. (*flower red.*)

ဖိရီးလီလဲ၊

SENSITIVE PLANT.

Where "garden flowers grow wild," near deserted habitations the pink globular heads of the sensitive plant may be often seen peeping through the grass. It is cultivated by the Burmese, and is quite naturalized.

Mimosa sensitiva.

ထိကရမ်း၊ နီညီဘီညီလည်.

CHRISTMAS DAISY.

A species of aster, or christmas daisy, is seen occasionally in European gardens.

FEVERFEW.

Feverfew a gaudy flowered annual, usually denominated a chrysanthemum, but which the botanists have removed to another genus, is often seen in gardens in Maulmain.

Pyrethrum indicum.

COREOPSIS.

The bright yellow flowered coreopsis, of the same tribe as the above, which derives its name from the resemblance of its seeds to an insect, is not uncommon in gardens.

Coreopsis.

PERIWINKLE.

Periwinkles, both the red and white varieties, are frequently cultivated by natives as well as Europeans.

Vinca rosea.

သဘောမညီပန်း၊ ငွေပန်း၊ လေးနပ်ရာသေပန်း.

PLUMBAGO.

Three different species of plumbago, the red, the white, and the blue flowered, are common in gardens; and the

first two are cultivated by the Burmese for the vesicatory power of their roots.

Plumbago rosea (flower red.)

ကင်ချပ်နီ၊ စာဂမာဝာ၊ စိတမူ၊ စိထမူ၊
စိသမူဂါ၊

Plumbago zeylanica (flower white.)

ကင်ချပ်ဖြူ၊ စာဂမာဒွာ၊ စိတမူဝါ၊

Plumbago capensis (flower blue.)

FOUR O'CLOCK.

The red, white, and yellow varieties of this pretty annual are all cultivated by the Burmese as well as by Europeans, who often call it the jalap plant. The true jalap, is however quite a different plant, a species of *ipomæa*.

Mirabilis Jalapa.

မည်ဝဉ်၊ မည်ရူး

COSTUS.

An indigenous species of the spirical costus is very abundant, but I do not find it described in the books to which I can refer.

Costus argyrophyllus?

ဖိုင်တောင်ခြုံ၊ ပလံတောင်ဝေး၊ ငွေ၊ ချီ၊ သုထူး၊

BALSAM.

The common balsam, or touch-me-not, *Noli me tangere* is very common both wild and cultivated.

Impatiens Balsamina.

ပန်ရှပ်၊ ဒန်ဒလက်၊ ဝာဂဝာ၊ ဝါ၊ ဂါ၊ ခုန်ပြီ၊

NEILGHERRY GRASS.

This is a species of *lobelia*, which is unknown on the Neilgherries, its name notwithstanding, and probably came from Java. Wight, writing on the *lobelias* says: "There is a small caespitose species much cultivated in pots, by amateurs, under the strange name of Neilgherry grass. I suspect the *Lobelia succulenta* of Blume, a Java plant."

GENDARUSSA.

An indigenous species of gendarussa is often planted for borders around our gardens.

Gendarussa vulgaris.

ပဝါနက်၊ ခါးခါး၊ တထေးသားသူး

BRYOPHYLLUM.

This curious flowered plant with a leaf like the house-leek was introduced into India by Lady Clive, from the Moluccas, and has been so naturalized on this Coast, that it may be sometimes seen growing around old pagodas like a wild plant.

Bryophyllum calycinum.

ရွက်ကျပ်ပေါက်၊ ဘုံခပ်ဂုံ၊ ကသံဉ်ကိန်မိန်။

INDIAN SHOT.

Both the red and yellow varieties of indian shot are often seen in gardens, and the first is much cultivated by the Burmese for the seeds which they use for sacred beads.

Canna indica.

ငွေသရန၊ ဖုံပေါ်ရမေ၊ မိန်တူလိယန်။

HOLLY LEAVED ACANTHUS.

Every muddy bank is relieved by crowds of a handsome blue flowered plant with leaves like a holly, and hence called the holly-leaved acanthus. The Burmans say its roots are a cure for the bite of poisonous snakes.

Acanthus illicifolius.

ခရား

PONTEDERA.

The margins of many wild jungle streams are pimples with a small species of the pontedera.

"That bonnie wee flower all wild in the wuds,
Like a twinkling wee star among the cluds,
Which opens its cups sealed up in the dew
And spreads out its leaves of a beautiful blue."

Pontedera vaginalis.

လယ်ပတောက်၊ ပက်ခွေမာ၊ ပနီမိဉ်ခွဉ်။

A much larger species is found in the neighborhood of Rangoon, and may exist in these Provinces.

Pontederia dilatata.

ပတေဝက်ကြီး။

LUDWIGIA

In stagnate water, a species of ludwigia which bears a pretty flower, is quite common.

Ludwigia parviflora.

BEGONIA.

A pretty little annual, a species of begonia is common in the neighborhood of both Tavoy and Maulmain.

Begonia.

XYRIS.

A species of xyris with conspicuous yellow flowers on imbricated scaly heads, is often seen in the paddy fields.

Xyris indica.

SPIDER-WORTS.

Several species of spider-worts are abundant. One, a creeping species of commelyna may be often seen trailing up the sides of fences. Another with blue flowers like the former but with a different habit, is sprinkled among the grasses at almost every door. It belongs to the genus ancilema. There are also one or two other species common, but I do not find them described.

Commelyna cæspitosa.

Ancilema herbaccum.

FLAGELLARIA.

A species of flagellaria is often seen, and is easily recognized by the tendrils it puts forth at the end of its leaves.

Flagellaria indica.

LORANTHUS.

Many of the trees are covered with different species of the parasitical genus loranthus, so abundant in most tropical climates; and the numerous small red flowers of one or two species in our forests are quite ornamental.

Loranthus.

SUNDEW.

There is frequently seen a delicate flower, so small that it is passed unnoticed by most observers, which is a species of *Drosera*, that curious genus of the sundew tribe, which produces Venus' fly-trap. There are two different species at Tavoy.

Drosera indica.

" *peltata.*

THE FRAGRANT ARUM.

This is a most singular plant. It has a stem one or two feet high and six inches in diameter resembling a low palm, while its leaves are gigantic cabbage leaves three or four feet long by two or three wide. The flowers are said to be fragrant. The natives cultivate it not for food, like the other species of arum, but, as they say, for medicine.

Arum odorum.

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RIBBON-LEAVED PINE APPLE.

This is a very ornamental variety of the pine apple that has been introduced from Malacca.

Ananas striatifolia.

PARASITICAL INCARVILLIA.

This is an epiphytical plant with flowers resembling the foxglove; and when in bloom it is a great ornament to the trees on which it grows, putting forth large, pendulous brilliant blossoms. It is common at Tavoy, but was not known in Maulmain until I introduced it a few years ago.

Æschynanthus parasiticus.

Incarvillia. "

CINNABAR COLOURED ERANTHEMUM.

On the sides of some of the limestone cliffs in Amherst Province this bright orange-scarlet flower is often seen; and it would be quite an addition to our gardens, in

which it has not yet found a place, although it is represented in Wallich's rare Indian plants.

Eranthemum cinnabarinum.

GOAT-FOOTED IPOMÆA.

On the sands of the sea shore, this large red-purple flowered species of ipomæa is abundant.

Ipomæa Pes capræ.

Convolvulus “

ပင်လယ်ကွင်း၌ ဂန္ဓာဝဠာပျံ့၍ တွေ့ကတိမ်း

TIGER-FOOTED IPOMÆA.

This species of ipomæa with large palmated leaves is not uncommon.

Ipomæa Pes tigridis.

ARROW-HEADED IPOMÆA.

There is an elegant little twining species of *Ipomæa* with arrow-headed shaped leaves. The corolla is cream-coloured with a purple eye. It is in bloom in the hedges of Maulmain at the close of the rains.

Ipomæa.

BONNET IPOMÆA.

In October, as soon as the rains close, a pretty little twining species of ipomæa is seen blushing through every hedge and bush. It is peculiar for its concave bonnet shaped involucre, in the midst of which half a dozen tiny blossoms hide their rosy lips.

Ipomæa pilcata.

MOON FLOWER.

A large flowered species of ipomea whose snowy blossoms open at sunset and shut at daylight is sometimes seen carried over arbours and pandols on this coast. It is

—“the white moon-flower, such as shows
On Serendib's high crags to those
Who near the isle at evening sail,
Scenting her clove trees in the gale.”

Calonyction Roxburghii.

Ipomæa grandiflora.

Another species with the same English name is occasionally seen in European gardens.

Calonyction speciosum.

JASMINE ROUGE.

This beautiful little creeper which the French and Burmese call red jasmine, the English China creeper, and the botanists quamoclit or dwarf bean, is quite naturalized throughout the Provinces. I have adopted the French name as being both more descriptive and euphonious than either of the others.

Quamoclit pennatum.

Ipomæa quamoclit.

မြတ်လေးနိုး။

HAIRY LETSOMIA.

A large red flowered creeper of the convolvulus tribe, and genus letsomia is seen during the rainy season on almost every hedge.

Letsomia setosa.

နွယ်နိုး။ သွန်စိပ်ဒီးဆူဉ်။

THUNBERGIA.

A large creeper with azure flowers belonging to the genus thunbergia is a conspicuous plant in the forests. I do not find the species described in any of the books to which I can refer.

Thunbergia.

HOLY BASIL.

The basil tuft so often seen about the temples of Hindus,

——— "that waves
Its fragrant blossoms o'er their graves."

has been so generally introduced that it is not less common in the neighborhood of Karen houses.

Ocimum sanctum.

ပင်မိန်းထွင်း၊ ဓမ္မဓာ၊ ကဘျုဒီးကရိုဉ်။

AIR PLANTS.

The Tenasserim Provinces abound in air plants, or orchids, most of which grow on trees and are epiphytes, but not parasites as they are often, by a misnomer, denominated. More than fifty different species have been described, and there are probably as many more unknown to science. The flowers of some of the species are great favorites with the natives, and are sought after to adorn the hair. The Burman books say that the trees around King Wathandria's hermitage were covered with orchids, and that after being plucked they would retain their fragrance seven days.

Nearly every species is worth more in England than its freight overland; and they are often exported. It is usually supposed that the plants require air on their passage, consequently the boxes in which they are packed are often perforated, or they are sent in baskets. But this is an error. The closer they are confined, the better will be their condition on reaching the place of destination.

A gentleman in England to whom I sent a box of orchids a few years ago, remarked: "The plants were in as good condition, as any I ever had from the east, in fact had it been the dry season when you packed them, I doubt not all would have come in full health, and you cannot possibly do better in future than pack them in *a precisely similar manner*. Their excellent condition convinces me that a great many of my losses amongst those I have had from the Botanical Garden at Calcutta, have been caused by the fact of their being packed in bamboo baskets instead of close boxes,—a close box seems *essential*."

There is no good reason why this noble, graceful tribe of plants should be so much excluded from our compounds, and left to fling their beauty upon their native wilderness of flowers, and "waste their sweetness on the desert air." If generally introduced, they might be a rich acquisition to our tropical parterres.



CHARMING DENDROBIUM.

The genus dendrobium furnishes fifteen or more known species of air plants on this Coast. The one considered most interesting, botanists have named the "charming dendrobium," the flowers of which are white, with a yellow lip, three or four inches in diameter, and exquisitely fragrant. It is a choice flower with the Burmese, and grows naturally and luxuriantly in the environs of Maulmain. Roxburgh mentions April and May as the time of flowering, but I have observed the plant blossoming in March, and the flowers are brought into town throughout the whole rains down to the close of October. Indeed it may be seen whitening under the emerald foliage of the groves nearly six months of the year. The Burmese call it the "silver flower."

Dendrobium formosum.

ငွေပန်း

ဘုံဘုံ.

မိထီးထီး။

PURPLE DENDROBIUM.

A species of dendrobium with small purple flowers, the lip tinged with orange, is seen garnishing the mango trees in the neighborhood of Maulmain. The flowers are peculiar, being in long racemes all on one side of the stalk. Lindley was not aware of its existence in these Provinces, and only quotes it as found in the straits of Malacca and the neighboring islands. He also says, that it flowers in June and July; but on this Coast, March and April are the months in which it is in full bloom.

Dendrobium secundem.

သစ်ပွင့်

ဖုစာဘုံလုံ.

မိထိန်ကီး။

YELLOW DENDROBIUM.

Two pretty yellow flowered species of dendrobium are more rare than the purple, but they are not uncommon in the Karen jungles.

Dendrobium Picardi.

Dendrobium aggregatum.

သစ်ပွင့်

WHITE DENDROBIUM.

A species with a small snowy flower is very abundant, but has less to recommend it than either of the preceding.

Dendrobium cretaceum.

TAPER-LEAVED DENDROBIUM.

An orchid with a filiform tapering leaf is frequent in the suburbs of Maulmain, and though I have never met with it in blossom, an English botanist says it is the taper-leaved dendrobium, which Lindley knew only as a New Holland plant.

Dendrobium teretifolium.

SPOTTED SACCOLABIUM.

One of the noblest orchids in the Provinces belongs to the saccolabium, or bag-lipped genus ; the lip forming a bag, or spur. The flowers are numerous, white, spotted with rose-violet, and stand on little pedicils all around the stalk so as to form an elegant plume sometimes a foot long, which give the trees on which they grow a most princely appearance. They are profusely multiplied in the neighborhood of Maulmain, and are highly valued in England.

Saccolabium retusum.

“ *guttatum.*

Aerides guttatum.

RED SACCOLABIUM.

Another species of the same genus with rosy flowers, is also very handsome and quite abundant.

Æccoelades ampullacea.

Saccolabium rubrum.

Aerides ampullaceum.

Lindley says it can scarcely be distinguished from *S. ampullaceum* of Wallich's catalogue.

FRAGRANT AERIDES.

The genus aerides furnishes one of the most fragrant of orchids, but it is not very abundant in our forests.

Aerides odoratum.

FRAGRANT BOLBOPHYLLUM.

Perhaps the most highly valued of the orchid order among the Burmese and Karens, is the sweet-scented bolbophyllum, which Karen youths wear in the lobes of the ear, and maidens in their hair. It abounds in almost every part of the jungles, throwing down delicate straw coloured racemes over the rough gray bark of old lagerstrœmias—emblems of childhood in the arms of age.

Bolbophyllum.

တဝဉ်းပန်း ဖာမာဂ္ဂဒါ ဒီပုလ္လါ.

CAREY-BOLBOPHYLLUM,

This is a very common orchid in the vicinity of Maulmain, easily recognized by a long leaf at the apex of a false-bulb, and by its small purplish flower.

Bolbophyllum Careyianum.

သစ်ခွပန်း

ERIA.

A species of eria is also one of the most abundant of our epiphytes, but the flowers are small, and have little to recommend them.

Eria obesa.

PHOLIDOTA.

In the suburbs of Maulmain, a white flowered species of pholidota is not rare.

Pholidota articulata.

သစ်ခွပန်း

TRIAS.

Many of the mango trees have a species of trias growing on them, the smallest plant of the orchid tribe that I have seen in the Provinces.

Trias oblonga.

HABENARIA.

There is an elegant species of habenaria in the Tavoy forests; and several other species of the same genus are scattered over the Provinces.

Habenaria acuiifera.

PERISTYLUS.

An elegant terrestrial orchid with snowy blossoms is occasionally seen, which belongs to the genus *peristylus*.
Peristylus.

GEODORUM.

Two other terrestrial species are members of the genus *geodorum*.

Geodorum candidum.

" *pallidum*.

VANILLA.

Dr. Falconer discovered, while on his visit to the Provinces in 1849, a new species of vanilla, but its specific name and description have not yet transpired.

Vanilla.

FERNS.

The ferns are among the most curious objects in the vegetable kingdom, and numerous species are indigenous in these Provinces.

TREE FERN.

A tree fern is very rare but is occasionally seen in the southern Provinces, resembling a small palm. Griffith found the same species in Assam.

The natives have but one name for both the cycas and tree fern.

Polypodium giganteum.

မုခ်ဇံ၊ မေ့ဝဲလ်၊ ကံး

CLIMBING FERN.

One of the most elegant climbers on the Coast is a terrestrial species of fern, easily recognized by its habit of running over other plants, and by the fringed margin of its leaflets, from which it is sometimes called "fringed fern." An allied species is found in the United States.

Lygodium scandens.

Ophiglossum "

ခန့်ခင်ကောက်၊ ခန့်ခင်လိက်၊ (Tavoy.)
ခန့်ခင်လိက်၊ ကံးလိက်၊

OAK-LEAVED POLYPOD.

In some parts of the forests, the trunks of almost every tenth tree have a great abundance of a large species of polypod growing upon them. The barren fronds are cordate, and stemless; but the fertile ones stand on long slightly winged stems, and are gashed like the leaves of an English oak.

Polypodium quercifolium.

ဝေဝကျီဒုင်ထုင်၊ မာ့ခါးချေ၊ လှဲခွံး

PITTED POLYPOD.

This fern is often found in company with the preceding species; and may be easily recognized by its creeping habit, and by the margins of the upper parts of its fronds being rolled together when in fructification.

Polypodium pertusum.

REED FERN.

There is a large terrestrial fern with hollow stems like a reed, which are often used by the natives instead of quills for pens.

Polypodium.

တကျားကြီးမိုး၊ ဘုံ၊ ထီး

STIPE-CLASPING BRAKE.

A large brake is common at Tavoy with pinnate fronds, whose leaflets have two lobes at the base which clasp their stipe.

Pteris amplexicaulis.

ကက်ခံ၊ ဖြူသကွံး

GRASS FERN.

The trunks of our forest trees are often clothed with the green drapery of the grass fern, which grows upon them precisely like bunches of long grass. It belongs to the same genus as the common brake.

Pteris graminifolia.

DAVALLIA.

An elegant fern of the genus *davallia* characterised by the fructifications being "in roundish separate spots, near the margin," is very plentiful in the neighborhood of Maulmain.

Davallia.

MULE FERN.

Near the sea shore a species of mule fern with cordate fronds is sometimes seen.

Hemionitis cordifolia.

SCANDENT LOMARIA.

The low lands near the mouths of our rivers and nullahs, are often fantastically dressed with a species of *lomaria* which creeps up to the tops of the tallest trees.

Lomaria scandens.

TAPEWORM FERN.

• The tapeworm fern, so called from the resemblance of the line of sori to a tape worm, is not infrequent.

Tenis blechnoides?

MAIDENHAIR.

A small handsome fern is seen in the crevices of old ruins and walls every where, of the same genus and nearly resembling the English maidenhair—"the prettiest of all ferns."

Adiantum.

CLUB MOSS.

The green woods of our southern provinces are often carpeted with the club moss, or ground pine, of which we have one or two handsome species.

Lycopodium.

SALVINIA.

A curious little floating plant, related to the ferns, of the genus *salvinia* is often seen on the surface of old tanks and stagnate waters.

Salvinia cucullata.

TABLE FRUITS.

There is a great variety of fruits indigenous and exotic in this part of the British Territories, and to a native, who while a child eats a raw sweet potatoe with as much zest as a European would an apple, they are no doubt considered unsurpassable. The ancient Celts eat acorns, and the modern Californians still use acorn bread, and the Burmese and Karens eat fruits which are but little superior to an acorn. Some however, are thought to be delicious and are held in high repute; but in general they are much inferior to the fruits of temperate climates.

MANGOSTEEN.

"Malaya's nectared mangosteen" is truly a delicious fruit, and by many esteemed as "the most palatable of known fruits," but though very delicate it is not to be compared to an American peach. It is cultivated to a considerable extent in Mergui, but is rarely seen in the northern Provinces.

Garcinia mangostana.

မင်ကျ

မာဂော့.

မင်ကျး

DORIAN.

The dorian holds an important place among the fruits of this country being regarded by the voluptuous natives as second to none. It is probably the most fetid fruit in existence. Wight speaks of "the dorian so celebrated on account of its fine flavored but excessively fetid fruit;" and adds: "It is said by Rumphius to be of a very heating quality, liable to excite inflammatory derangements of the system."

Durio zibethinus.

ဒုရည်

ဘိမ့်ရည်.

ဝိမ့်ရည်.

တူရ်ခွ်

MANGO.

The Mango deserves the first place among the indigenous fruits, being, as Dr. Lindley truly says: "To the inhabitants of India what the peach is to Europeans; the

most grateful of all fruits. Its flesh is filled with a rich luscious juice ; but the inferior kinds have also so much turpentine flavour as to be uneatable." Unfortunately, our Mangoes are notoriously inferior ; and to say nothing of the turpentine flavor that some of them occasionally have, half, if not three fourths of all that are sold in the bazar, are worm eaten, though that is not at all apparent when they are bought.

There are two different species, both of which the natives say grow wild, and several varieties are cultivated in the Provinces. The finest is a variety from Siam, which produces a large fruit with a very thin stone.

Mangifera indica.

" *sylvatica.*

သရက်

သံပရာ

မင်း

HORSE MANGO.

This is a large mango multiplied at Mergui, and is quite a favorite with the natives. It has an odour resembling the dorian, and like that has been introduced from the Straits.

Mangifera fatida.

သရက်

သမ္ပရာ

သရက်

OPPOSITE-LEAVED MANGO.

This indigenous tree produces a fruit much like a plum. There are two varieties,—one bearing an intensely sour fruit, and the other, one as insipidly sweet.

Cambessedea oppositifolia.

Mangifera

သရက်

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LICHI.

The lichi, originally from China, is a favorite fruit in Bengal, but did not succeed on this Coast until recently. The trees bore their first fruit last year.

Nephelium Lichi.

PAWPAW.

The first fruit that I saw on the table in Burmah, was an American pawpaw, not the pawpaw of the Mississippi valley, *Porcelia triloba*; but the pawpaw of South America and the West Indies. Europeans call it papaya, from the Portuguese *papayo*; and by the Portuguese it was probably introduced into India. The fruit resembles a melon in appearance, and often tastes no better than a good English turnip.

Carica Papaya.

သင်္ဘောသီး ဟိပ်ဒိုသီး (Tavoy.)

ဒဝံ့တံၤ ကိစ္စံး သကွံလွဉ်း

GUAVA.

The guava, another American tree is planted perhaps more extensively than any other fruit tree in the country. Loudon has the most correct notion of the fruit that I have seen. He says: "Most of the species are cultivated in the tropics for their fruit, which also ripens freely in this country, but is of little merit."

The white guava is the species most usually cultivated; but the red is not uncommon.

Psidium pyrifera (white.)

" *pomifera* (red.)

မာလာကာ သမောင်လေဝင်း (Tavoy.)

လဲဉ်းရဲ နဂါး

PINE APPLE.

Another of the most abundant fruits in the Provinces is the pine apple, also an American production. With the plant, the native American name appears to have been introduced into Burmah, for *nanas* is said to be the name it had among the Peruvians where it was originally found, and the Burman name is *nanat*; which the Sgaws have abbreviated to *nay*.

Ananas sativus.

Bromelia Ananas.

နာနတ် ဂါရဲ နဲး

PLANTAIN.

The plantain or banana, though a far less palatable fruit, holds the same place in this country that the apple does in England, and the United States. It is used as a vegetable as well as an article for the dessert, the great proportion being eaten with rice and meat in the place of potatoes.

There is perhaps no plant of which so many preposterous things have been carelessly written in books of travels, and then copied into works of graver character, than this. Among other things equally veritable, it is said, * "Three dozen plantains are sufficient to serve one man for a week instead of bread, and will support him much better." A Karen by me says he often eats ten at a time, and a hundred would not be sufficient for a man one day if he had nothing else, unless they were very large.

Like the mango, the tree is indigenous, but the wild fruit is too full of seeds to be eatable. The plantain and banana, which were formerly regarded as distinct, are now considered by botanists as one species, but it embraces many varieties; I have the Burman names of *twenty-five* before me. "The numerous varieties," writes Voigt "we have in vain tried to put in some order. The attempt made for this purpose, in Schultens, appears to us to have only increased the confusion." The *Manila hemp*, from which a fabric of the finest texture is prepared, is made from the leaves of a species of plantain tree, *M. textilis*. Another distinct species of this genus grows wild in our jungles, and is rather an ornamental plant, which is all that it has to recommend it. Unlike the common plantain it never throws up shoots from its roots.

The name of the plantain in Pali is *manza*, which is its Arabic name, *manz*, with a final vowel added, to pronounce the last consonant, no words in Pali, ending in any consonant excepting *n*. Now if its Arabic name be so widely diffused, it seems quite certain that had the plant been known to the Hebrews, the Hebrew being cognate with Arabic, it would have had a similar name. This fact is a sufficient refutation of the *conjectural* interpretations of

* See London's Encyclopedia of Plants, under *M. paradisiaca*.

certain passages of Scripture that we meet with from time to time. Thus: "Loudolf's conjecture that *dudaim* (mandrakes) were the fruit of *Musa paradisiaca*, (plantain-tree,)" which has been recently revived in a modern work, cannot stand, on account of its name. For the same reason, the conjecture that the grapes which the spies brought from Canaan, were plantains, cannot be sustained. The plantain seems a favorite plant to build fancies upon. Gesenius in defining *teenah*, the fig tree, refers to Gen. 3:7, "Where," he says, "the *Ficus indica* or *Musa paradisiaca*, plantain tree, Engl. with very large leaves seems to be meant." This is perfectly conjectural and is wholly unsustained by the usage of the word, as well as that it bears no resemblance to its Arabic name.

Musa paradisiaca.

ငှက်လျား သမ္မိရ သကွံ

OLEASTER PLUM.

This sour red plum makes very good tarts and jellies, and abounds in some parts of the jungle.

Elæagnus conferta.

မင်္ဂလာ ဝဇာ. သထူ

MALAY APPLE.

This tree thrives luxuriantly at Mergui, and bears some resemblance in taste to a juicy apple, but it is a very indifferant fruit.

Eugenia malaccensis.

Jambosa malaccensis.

သပြေသပြေ

ROSE APPLE.

The rose apple described, as "tasting like the smell of a rose," is cultivated to a small extent in European gardens.

Eugen'a Jambos.

Jambosa vulgaris.

JAMBO FRUIT.

A small black plum is often seen in bazar which is produced by a species of eugenia. According to Burman

geography there is a eugenia tree on the great island or continent which we inhabit, that is twelve hundred miles high, one hundred and eighty six in circumference, with five principal branches each six hundred miles long. From this tree, the island derives its name *Sambu-deba*, Eugenia Island. *

Eugenia.

သပြေတဒိကျယ်

မာ်၇၀.

သဇ္ဇလၢ်

HERITIERA FRUIT.

One of the best and most plentiful of the jungle fruits is the heritiera: It grows in bunches resembling large grapes, is agreeably sub-acid, and when ripe, of a yellowish hue. The tree is small, and when arrayed with these long golden bunches it is very beautiful. It would be quite an acquisition to our gardens both for ornament and utility.

Heritiera attenuata.

ကနိး

ကစော (Tavoy.)

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သၣ်ပဇ် ခါဂါ

CUSTARD APPLE.

The custard apple, an American fruit, is cultivated by the Burmans in these Provinces occasionally, and quite extensively in Burmah Proper. The pulp is very agreeable, and has much the appearance of custard.

Anona squamosa.

သဇ္ဇါ

SOUR SOP.

This fruit, resembling the custard apple, is sometimes cultivated by Europeans.

Anona muricata.

* From ဝဇ္ဇါ—*a eugenia tree (Pali.)*

" ဝဇ္ဇါ—*an island.*

"

L*

BULLOCK'S HEART.

Of the same genus as the custard apple is the bullock's heart, which I have occasionally found in native gardens.

Anona reticulata.

UVARIA FRUIT.

This fruit has the taste and appearance of the North America pawpaw, and they are members of the same natural family. It is the produce of a scandent shrub abounding in the jungles.

Uvaria grandiflora?

တုတ်၊ ဘုံပဗံ၊

သညိဌ်းသီးပညိ၊

ORANGE.

Oranges are quite abundant, but for the want of proper attention they are much inferior to the West India oranges, and to those cultivated in the South of Europe. The trees are often exceedingly prolific. A seedling that I planted, produced in the ninth year more than two thousand oranges.

Citrus aurantium.

လိမ္မော်၊ ရပ်ဝင်း၊ (Tavoy.)

လိမ္မော်၊ ရှင်ဝင်း၊ သန့်သွံ၊

SWEET LIMES.

A considerable proportion of the fruit sold for oranges are sweet limes. Dr. Pickering of the American Exploring Expedition, remarks: "I did not meet with the true orange, either in Hindostan or the East Indies." The tree may be often distinguished by its leaf which is usually slightly winged, and smaller than the orange.

Citrus limetta.

SHADDOCK.

The shaddock or pumplemuss may be often procured in market, but the fruit is decidedly inferior to the Bengal pumplemuss.

Citrus decumana.

ရှက်တုံအို၊ ဘုံဒုံ၊

ဆီခါးသန့်ထို၊

THREE-LEAVED TRIPHASIA.

The three-leaved triphasia which bears a small berry like an orange in miniature, often found in Chinese preserves, is raised in European gardens.

Triphasia trifoliata.

BENGAL QUINCE.

The Bengal quince is grown by the Burmese to a small extent.

Ægle marmelos.

ခွေဝ်

သိပ်

ဒိုက်ပုတ်ကိသုဉ်

WOOD APPLE.

Captain Phayre told me that he had seen the wood apple in cultivation by the Burmese in Amherst Province, but I have never observed it.

Feronia elephantum.

မုနီ

CITRON.

The citron is cultivated, and I have met with citron trees in the jungles apparently indigenous. The fruit however, is much inferior to the Bengal citron.

ချောက်တခါး ပရမ္ပသဒါ၊ မြားခံသည့်သွံ

SMALL LIME.

The small acid lime is seen almost every where in abundance.

Citrus bergamia.

“ *acida.*

သံဗရာ

ပကစာချွန်

ပနီကျဲပနီသည့်သံသိ

LARGE LIME.

Large varieties of the acid lime are diffused all over the Provinces; and Europeans usually call them citrons; but the trees are easily distinguished by their leaves, as the leaf of the citron is simple, while that of the large lime is winged.

Citrus bergamia.

ချောက်

ပရမ္ပ

မြားသည့်သွံ

DOUBLE-LEAVED CITRON.

There is a species of citrus at Tavoy with a leaf that looks like two leaves joined together, the wings on the petiole being as broad, on even broader, than the leaf itself. The fruit is small and there are two varieties, one with a smooth, and another with a rough skin. I do not find it noticed in any of our Indian Floras, but Dr. Pickering met with a similar tree on the Samoan Islands, a member of the Philippine Flora.

Citrus torosa?

ကျောက်ပုတ်။ သင်္ဃာသွံ။

POMEGRANATE.

The pomegranate is cultivated to a very small extent in gardens by both Burmese and Europeans.

Punica granatum.

သလဲ။ စလဲ။ ဘါ။ သလဲ။

WILD RAMBOUTAN.

One of our indigenous trees bears a fruit whose sub-acid aril is very agreeable to the palate, and much resembles that of the ramboutan so famous at Malacca. Malays to whom I have shown the fruit, say it is the wild ramboutan, and the tree certainly belongs to the same genus; but never having met with it in flower, I cannot determine the species.

Nephelium.

ကျက်မောက်။ ဘျီဖုံနု။ သင်္ဃာကပာမုဒ်။

SCHLEICHERA.

The fruit of this tree resembles the wild ramboutan in every thing except that it is covered with prickles half an inch long. It is rarely seen in market but would be a valuable addition to the dessert. The tree grows among the hills of Tavoy.

Schleichera.

ကျက်မောက်။ ဘျီဖုံနု။ သင်္ဃာကပာမုဒ်။

OTAKEITE GOOSEBERRY.

This tree, which is larger than the jujube, is planted by the Burmese all over the Provinces, who value its fruit highly. It bears some resemblance to a gooseberry both in appearance and taste; and I have heard it called "the Otakeite gooseberry." The tree here is diœcious.

Cicca disticha.

Phyllanthus longifolius.

သိဖြဲ၊ သဘောသိ၊ ထံမိၤထီၤမးတီၤ၊

CARAMBOLA.

The carambola tree bears a sour fruit which makes a good tart, and there is a variety which bears a sweet fruit. The tree, though originally, it is said, from the Moluccas, flourishes well on this Coast, and is quite naturalized.

Averrhoa Carambola.

တောင်ယား၊ ဆောင်တီး၊ (Tavoy.) သံ၊ သံ၊

သံ၊ သံ၊ သံ၊ သံ၊

BILIMBI.

The bilimbi tree, another species of the same genus, has been introduced into a few of our gardens, where it bears profusely, and its fruit is used like that of the carambola.

Averrhoa Bilimbi.

BRAZIL GOOSEBERRY.

A species of physalis which bears a berry, sometimes called the "Brazil gooseberry," is occasionally seen in gardens, and the fruit in tarts has much the taste of the gooseberry.

Physalis peruviana.

SAPODILLA PLUM.

In a few European gardens may be found the tree which produces the sapodilla plum; whose "fruit, in appearance like an old decayed potatoe, is yet the most luscious in the West Indies."

Achras Sapota.

CHOCOLATE-NUT TREE.

The chocolate-nut tree is seen in Tavoy gardens, and it brings its fruit to perfection.

Theobroma Cacao.

BENGAL CURRANTS.

In some of the European gardens a species of carissa is cultivated for its berries, which taste when stewed like currants.

Carissa Carandas.

GRANADILLA.

This luxuriant exotic from the Jamaica passion flowers, flourishes well on the Coast, and is very prolific. The smooth oblong fruit grows nearly as large as a cucumber, and contains a succulent pulp, which makes a cooling delicious dish, and when prepared in tarts, can scarcely be distinguished from green apple. The Rev. Mr. Bennett of Tavoy, has recently introduced it among the Karens, by whom it is highly esteemed, and much sought for. It will no doubt soon be generally diffused through the Provinces, as it possesses all the attractive qualities of fine fruit, handsome fragrant blossoms, and when trailed over an arbor, a rich pleasing shade.

Passiflora quadrangularis.

ဘာသာဝဏ်း

MULBERRY.

There is a species of mulberry from China sparsely diffused throughout the Provinces, which produces a very agreeable black berry in great quantities and is a valuable fruit.

Morus atropurpurea.

မိုးဝါး

ဘုံဒု.

သထိန်မိန့်

STRAWBERRY.

I have raised very fine strawberries in my garden at Tavoy, but the plants require considerable care.

Fragaria.

WILD RASPBERRY.

Griffith says there is a species of rubus in the Provinces, and Wallich found one on the Irrawaddy; but whether either produces an edible fruit or not, I am unable to say. The existence of an indigenous species, though worthless itself, is however, interesting; as it indicates that the true raspberry might be propagated with success.

Rubus Gowreephul.

ROSELLE.

The roselle plant, the red sorrel of the West Indies, is very widely diffused and its red sour calyx makes a fine flavored jelly, and preserve, which is a good substitute for cranberries.

Hibiscus Sabdariffa.

ချစ်လောင်း ဟိမ္မာရိယ တဲဆိပ်

WATER MELON.

Both Burmese and Karens raise water melons, but they are neither so large nor so sweet as those of America.

Citrullus Cucurbita.

ဖရုံ ချိပ်ခါ တဲတိပ်ရဲ

MUSK MELON.

A very indifferent musk melon is cultivated by the natives generally.

Cucumis Melo.

သွားငွေ ကျောက်ခွံ (Tavoy) ဘုံမာ ခံပုဒ်

CHESTNUT.

There is an indigenous chestnut tree growing on the uplands which yields abundantly, and whose fruit is sold in bazar, but they will not compare with the French chestnuts, nor even with the American chincapins.

Castanea martabanica.

ဆင်ချ ဆင်တ (Tavoy) ဘုံမာ သုဒ္ဓိပ်

FETID STERCULIA.

The fetid sterculia is not uncommon in the forests, and its seeds are eaten like filberts.

Sterculia fætida.

လက်ခပ်။

BOODH'S COCOANUT.

A handsome tree bearing a large fruit, called Boodh's cocoanut is met with in the Provinces, whose winged seeds are sometimes eaten by the natives.

Sterculia ulat ၊

PEA NUT.

Ground nuts are abundant in the bazars, and are consumed in large quantities by the natives. The plant is occasionally seen growing, but the nuts are principally imported from Pinang and Rangoon.

Arachis hypogea.

မြွေ။ ဘုံသု၊ ၊ ပထိုးရှင်လီ။

SANDORICUM.

The sandoricum tree bears a fruit the size of an orange, occasionally called the wild mangosteen, to which it bears some resemblance. It has a fleshy acid pulp and makes a very good jelly, but has a peculiar odour. The natives eat the fruit raw, and esteem it excellent.

Sandoricum indicum.

သစ်တို။ ဓမ္မာ။ သရ။

WILLUGHBEIA.

There is a species of willughbeia in the forests that produces a fruit as large as an apple, which Europeans sometimes call "a kind of a fig." It has an agreeable taste but abounds in a milky juice.

Willughbeia martabanica.

RED NEPHELIUM.

This is a small inferior fruit, eaten by the natives only, though belonging to the same genus which produces the famous lichi, and bearing its fruit in bunches like that.

Nephelium.

ဆိပ်ချေ။ ဗျာပွာ။ လီဂါး။

TAMARIND.

The tamarind is a large handsome tree, with spreading branches, and is worthy of care for its light beautiful green foliage, and profuse yellowish blossoms with veins of red, as well as for its fruit. It is an exotic on this Coast, but is planted by natives around their dwellings for the leaves, which being slightly acid, afford an agreeable condiment to their curries. I have seen the tree bearing richly in Mergui, but have rarely observed it yielding fruit abundantly in the northern provinces. The dried fruit is imported in large quantities from Burmah, and is constantly for sale in the bazar.

Tamarindus indica.

မကျဉ်း။ မင်ကလဲ။ (Tavoy) မာ့ချွံ့။
သန်ဒါကျွန်း၊ မိန်ကျိန်း။

CASHEW-NUT.

The cashew tree bears an agreeable fruit, to which is attached the nut, both of which are common in the market.

Anacardium occidentale

သီဟိုသရက်။ ရှက်ဘသစ်။ (Tavoy.)
ခပ်ပျံ့သို။ ခင်းလိပ်သီး။ မင်ကလဲ။

JUJUBE.

The jujube from which the famous jujube lozenges are made, is a small sour berry, very favorite with the Burmese and Karens. The tree is of middle stature, and is often found apparently growing wild.

Zizyphus Jujuba.

ဆီး။ မာဘွဲ့။ ထံမိတ်၊ မာတိတ်။

PHYLLANTHUS.

There is a small tree very abundant at Maulmain, and in many other localities on the Coast, belonging to the genus *phyllanthus* which bears a small intensely sour fruit, that is valued by the natives.

Phyllanthus.

ဆိဖြဲ၊ တဒူး၊ (Turvo.) လ၊ သယ၊

INGA.

Native gardens are often ornamented with a species of *inga* which affords a thick beautiful shade, and when in flower its tufted boughs seem to bend under their burdens of sweet-scented blossoms. It is a leguminous plant, whose seeds are poisonous, and when taken into the stomach sometimes produce disastrous consequences, yet the Burmese and Karens are extravagantly fond of them, as a condiment to their preserved fish, and they bring a high price in the bazars.

Inga bigemina.

တညင်း၊ ဘဂ္ဂါ၊ သန့၊

EDIBLE ZALACCA.

A red scaly fruit produced by a species of *zalacca* may be often seen in bazar, but it is eaten by the natives only.

Zalacca edulis.

ရင်ကင်း၊ ခရ၊ စခါ၊

FIG-TREE.

A stunted fig-tree or two may be seen in a few European gardens, but the fruit rarely comes to perfection; although there are perhaps more indigenous trees in the jungles belonging to the fig genus, than to any other in the whole vegetable kingdom.

Ficus Carica.

ညောင်ရည်၊ ချုံ၊ လုံး၊ ချာဉ်ဒါ၊

INDIAN GRAPE.

There are three or four species of grapes in the Provinces. One is seen creeping over every hedge and bush, which has sometimes been mistaken by Europeans for the

true grape vine; but the fruit is acrid, like all the indigenous species, and not edible even to a native.

Vitis indica.

ရင်ခေါင်း ထီးမိ၍၍အခွံဆံ့၍

GRAPE VINE.

The grape vine many be seen in many of our gardens, but it very rarely produces fruit. I once saw a vine in Mergui, however, which had on it several fine bunches of grapes; and I have heard of grapes being occasionally brought to perfection in Maulmain.

Vitis vinifera.

ဝဍ္ဎ် ဝဍ္ဎ် ဝဍ္ဎ်

CHERRY.

Voigt says there is a species of *cerasus*, or cherry "a native of Maulmain," but I have never happened to meet with it. He had however good authority for the statement; and Griffith remarks that there is in the Provinces one species of the almond tribe, "which abounds in prussic acid."

Cerasus.

WALNUTS.

Walnuts are occasionally brought from Rangoon; but it is not certain that they are the produce of the indigenous walnut tree.

Juglans arguta.

သစ်ကြီး

HOG'S PLUM.

This is an intensely astringent fruit very appropriately named. The Karens have a tradition that in those Golden Days when God dwelt with men, all nations came before him on a certain day, each with an offering from the fruits of their land, and the Karens selected the hog's plum for their oblation; which gave such offence, that God cursed the Karen nation and placed it lowest among all the nations by whom they are surrounded.

Spondias mangifera.

ကျွန်း ဖွဲ့လှိုင် (Tavoy.) ဝါး သစ်း

COCOANUT.

The cocoanut is one of the most valuable of tropic fruits and the milk of the young nuts is a very grateful beverage.

Cocos nucifera

ခရမ်း ငှက် စိမ်း

LOQUET.

The loquet is sometimes seen in flower around our bungalows, but I have never met with it in fruit.

Eriobotrya japonica.

PEAR TREE.

Wallich found a species of pear tree growing on limestone mountains, near the Irrawaddy; and it may exist in these Provinces, though I have never met with it.

Pyrus.

JACK.

The jack is perhaps more abundant than any other fruit, except the plantain. It is invaluable to the natives, but is an indifferent fruit to Europeans. The tree is large and affords a very dark grateful shade, and when the fruit, which is often as large as a man's head, is hanging all around its branches it is a grand object.

Artocarpus integrifolius.

ခရမ်း ဂွံ ခွံ

BREAD-NUT.

The bread-fruit tree is cultivated in a few gardens at Tavoy and Maulmain, and bears very well; but the fruit is of that variety which is full of seeds and is of no value.

Artocarpus incisus.

BREAD-FRUIT.

The true seedless bread-fruit tree is cultivated at Penang, and has recently been introduced into Mergui, where it is said to flourish.

Artocarpus communis.

MOUNTAIN JACK.

There is an echinated, agreeably acid fruit produced by a large tree, which the Burmese call the mountain jack. The leaves of the young trees are gashed like some species of oak. One of our Tavoy surgeons transplanted a tree to his own garden, under the impression that it was *A. incisa*, the breadfruit tree, not being aware that in old trees the leaves are entire.

Artocarpus echinatus.

တောင်မိန့်၊ တောင်မိန့်၊ ဖာ၊ ဖါ၊

LACOOCHA BREAD-FRUIT.

This fruit is usually designated by Europeans "a kind of a fig;" but it is a species of artocarpus, occasionally raised near native houses.

Artocarpus Lacoocha.

မြောက်လုပ်၊ ဖာခ၊ ကဟ်၊

HAIRY BREAD-FRUIT.

This indigenous fruit resembles the preceding, in every respect, except that it is covered with soft weak hairs.

Artocarpus hirsutus.

မောက်လုပ်ကြီး၊ ဖာခဖာခဝံ၊ ကဟ်ခမိန့်၊

SMALL BREAD-FRUIT.

This is an orange-colored fruit resembling in taste a custard apple, and in appearance a fig, but it is a species of artocarpus, which I cannot find any where described, though not scarce in our forests.

Artocarpus.

မြောက်လုပ်ငယ်၊ ဖာခဖာခ၊ ကဟ်ခံနီ၊

MORINDA FRUIT.

A species of morinda is often seen growing near Burman houses, which produces a fruit as large as a pullet's egg. It is a great favorite with the Burmese, and is served up in their curries.

Morinda.

မဲယို၊

HOG-CHESTNUT.

Every one has heard of the horse-chestnut, but few are probably aware that in these Provinces the hog-chestnut is indigenous. Such is a literal rendering of the Burmese name, and the tree is certainly a species of chestnut, but it is not described in any of the books to which I can refer.

Castanea.

ဝက်သစ်ချ်

သိုဘဝံဒု.

သုထီးမီး

CHINESE DATES.

"The Burmese," says a correspondent who resided several years in Ava, "call the Chinese fig, which is brought in great quantities overland to Ava, *tee-thee* or *tay-thee*.*" This is the same fruit which in England is called Chinese date; but is neither a fig nor a date, but the fruit of a species of ebony; and a more appropriate name would be the Chinese persimon, the persimon tree being also a species of ebony, and there is a considerable resemblance in the fruit.

The tree which produces this "Chinese date," is occasionally cultivated by the Burmese, but it bears fruit very sparingly, and I think with Roxburgh, that it is "by no means equal to a good apple."

Diospyros Kaki.

တယ်

တဉ်း တိရက (Pali.)

MIMUSOPS FRUIT.

A dried fruit is occasionally seen among the Chinese, brought from Singapore, and some of the seeds produce trees, which, judging from their leaves, can be no other than

Mimusops Kauki.

*တဉ်းသီး or တယ်သီး

VEGETABLES.

There is a great variety of vegetables indigenous or cultivated in the Provinces; but the best are scarce, and rarely for sale in the bazars. Nearly every plant produces a vegetable for the natives. The Burman books say, there are ten kinds of vegetables, or pot herbs, corresponding to the parts of a plant that furnish them.

ကင်းရွက်ဝါး	အမြစ်	—the root	မလ	(Pali.)
	အရွက်	—the leaf	ပတ္တ	"
	အညွက်	—the sprout	ကလိရ	"
	အညှိ	—the shoot	အဂ္ဂ	"
	အရင်း	—the tuber	ကန္တ	"
	အနှစ်	—the heart	မိတ္တ	"
	အသီး	—the fruit	ပလ	"
	အခေါက်	—the bark	တဝ	"
	အပွင့်	—the blossom	ပုပ္ပ	"
	မု	—mushroom	ဆတ္တ	"

KAREN POTATOE.

This is a small yam not much larger than a kidney potatoe, which it much resembles both in appearance and taste. It is cultivated extensively by the Karens, and being more like a potatoe than a yam, has acquired the name of the Karen potatoe, and is sometimes called the Tavoy potatoe. It is the best vegetable we have, but unfortunately it can be obtained during a few months only in the year. I am not aware that it is ever found wild on the Coast; and it appears to me to be either identical, or nearly related to Roxburgh's

• *Dioscorea fasciculata*.

ကရေခွံ

ခံာ်

ခွံခွံ

ELEPHANT-FOOT YAM.

A yam with a tuber about the size and shape of an elephant's foot, ranks next to the preceding species. It is

white, and often as light and agreeable as a potatoe. It abounds in Karen gardens but is rarely seen among the Burmese, or in the market.

Dioscorea.

မြောက်။ ကျွမ်းကျင်သူ။ နွယ်ကစီခိုလီ

LARGE WHITE YAM.

There are several different species and varieties of white yams in cultivation. The one most in repute has arrow-headed cordate leaves.

Dioscorea globosa.

မြောက်မြို့။ ကျွမ်းကျင်သူ။ နွယ်ဝါ။

DARK PURPLE YAM.

A yam with a dark purple root is one of our best yams, and is extensively cultivated both by Karens and Burmese.

Dioscorea atropurpurea.

မြောက်မြို့။ ကျွမ်းကျင်သူ။ နွယ်ဝါ။

WILD YAM.

There are several indigenous species of yams, which are eaten by the Karens in times of scarcity, though very acrid. One is remarkable for its large ternate leaves, of which its leaflets are sometimes nearly a foot long, and six inches wide.

Dioscorea daemon.

ကျွမ်းကျင်သူ။ နွယ်ဝါ။ နွယ်ဝါ။

SWEET POTATOE.

The sweet potatoe is very abundant but it is vastly inferior both in size and quality to the sweet potatoe of the Southern States of America.

Batatas edulis.

Convolvulus batatas.

ကျွမ်းကျင်သူ။ သဘာဝမြောက်။ ကျွမ်းကျင်သူ။
နွယ်ဝါ။ နွယ်ကစီ

TELINGA POTATOE.

This is a plant of the arum tribe which produces tubers like a yam, much esteemed by the natives ; and is very generally raised by Burmese and Karens.

Amorphophallus campanulatus.

Arum campanulatum.

ဝါ ဓဝံ့. ဃဝံ့

COLOCASIA.

This is another plant of the arum tribe which is grown by the natives for its tubers, that supply the place of potatoes.

Colocasia antiquorum.

ဝမ် ဗ၅၂ခဝံ့. ခုဉ်ဒါ

COMMON POTATOE.

The potatoe is of easy culture but the tubers are very small, and it is not an object of cultivation, though with a little attention, it might possibly be made one.

Solanum tuberosum.

PEA.

The pea is seen in European gardens, and produces very well in some localities.

Pisum sativum.

GOA BEAN.

There is a variety of the Goa bean which produces esculent roots that are eaten like potatoes, and are a very tolerable vegetable. The young pods are also eaten like French beans.

Psophocarpus tetragonolobus.

Dolichos

ပဲငြိမ်, ပဲဆောင်တီ, ဟွံ-ဟွံ, ခါး, ထွဲ, ထွဲသလိ

SWORD BEAN.

The sword bean is planted to a small extent, and its young pods are used as a vegetable.

Canavalia gladiata.

Dolichos gladiatus.

သေနင်ဒီ၊ ဟု.ဟု. ထွံသံခုဉ်းဘိထန်ကဘိ၊
ဘိထန်ပဒိန်၊

INDIAN KIDNEY BEAN.

Burmese and Karens grow several varieties of one or two species of lablab, which occupy the place of kidney beans in Europe.

Lablab vulgar.

Dolichos lablab.

ဝဲ၊ ဟု.ဟု. ဘိထန်၊

NATIVE BEAN.

The natives cultivate another bean which resembles the common European bean, and is esteemed by them a good vegetable.

Cyamopsis psoraloides.

Dolichos fabæformis.

ဝဲပွန်၊ ဟု.ဟု.ဝါး၊ ဘိထန်သဝံင်၊

BLACK GRAM.

Crawfurd says that one of the most common pulses seen in Burmah is the *Phaseolus max*; which is the plant that produces the black gram of India.

Phaseolus Mungo, melanospermus.

" *Max.*

ဝဲ၊

MELILOT.

Griffith saw large fields of melilot in the neighborhood of Ava, but I have not seen it in these Provinces.

Melilotus.

ဝဲ၊

AGATI.

The legumes of the agati are a favorite vegetable with the natives, and the trees, which grow very rapidly, may be seen in perhaps every town and village in the Provinces.

Agati grandiflorum.

ပေါက်ပန်း၊ ပထိဆွန်ဖီထိန်ကီး၊
ဘုံသျှံဗမာဘုံသုံ့.

CHICKPEA.

The chickpea, or gram, is grown extensively by the Burmese, especially in Burmah, and large quantities are imported into the Provinces from Rangoon.

Cicer arietinum.

ကုသားဝဲ၊ ဘုံသုံ့ပါး၊ ပထိးကီးလေး၊

DOLL.

The doll bean is raised to a small extent, but the doll sold in market is principally imported.

Cajanus indicus.

ဇုန်ချိုင်း၊ ဟောရေမျှ၊ ကျွန်ဘုန်း၊

WILD FRENCH BEAN.

A species of phaseolus, the genus which furnishes the common French bean, grows spontaneously everywhere in the Provinces. Roxburgh describing the species says, that he never found it "but in its wild state;" while Voigt is made to say, by a mistake of the printer no doubt, "Cultivated, in which state only it was found by Dr. Roxburgh."

Phaseolus trilobus.

ပဲသံတာ၊ ဟိဒ္ဒါ၊ သဘုသူး၊

WILD DOLICHOS.

An indigenous species of dolichos with downy leaves and pods, abounds in some sections of the country.

Dolichos pilosus.

တောပဲ၊ ဟုဟမာ၊ ဘိတန်မံ၊

WILD SWORD BEAN.

On the sea shore a wild species of sword bean is found growing in great profusion.

Canavalia virosa.

မြောက်ပဲ၊ ပု၊ ပု၊ ပု၊ သွယ်ခုပ်ပဲ၊

HORSE-RADDISH-TREE.

The horse-raddish-tree is propagated by the Burmese for its pods, which are eaten in curries; but it is chiefly valued by Europeans for its roots which cannot be distinguished when eaten with roast beef, from the common horse-raddish, *Cochlearia Armoracia*.

Moringa pterygosperma.

ပန်သလုံ၊ စိပ်သို၊ ပထီးသွန်၊

ASPARAGUS.

The common English asparagus is sometimes seen in European gardens, but it is very unproductive.

Asparagus officinalis.

WILD ASPARAGUS.

There is an indigenous species of asparagus, which produces a passable substitute for the English vegetable, to which however, it is much inferior. It bears a sweet-smelling flower, and is deserving of cultivation as an ornamental plant.

Asparagus acerosus.

ရှစ်ခတ်ကပ်၊ ကုလ၊ မွန်၊

CABBAGE.

One of the most highly esteemed vegetables of European gardens is the cabbage, which is raised from imported seed, and fine plants are sometimes produced, but they are seldom in the market.

Brassica oleracea.

သဘောသိုလာ၊

TURNIPS.

Turnips are occasionally grown, but they do not reward the cultivator so well as cabbages.

Brasica Rapa.

မိုလာ၊ ဟဝံ၊ သထန်ဒိန်၊

RADDISH.

Raddishes abound in vegetable gardens, and are almost always in the bazars.

Raphanus sativus.

မိုလာ၊ ဟဝံ၊ သထန်ဒိန်၊

MUSTARD.

I have seen a species of mustard on the banks of the Tenasserim, several days journey from any human habitation, and which the Karens regarded as growing spontaneously, but it did not appear to differ from the species in common culture on the Coast, and the seeds had probably been dropped there by the passing traveller.

Sinapis.

မိုညင်း၊ ဟဝံ၊ သထန်

WATER CRESS.

Griffith says he found an indigenous species of nasturtium in the Provinces, but he does not appear to have described it.

Nasturtium.

GARDEN CRESS.

Among the dried seeds sold in bazar for medicinal purposes, are the seeds of the common garden cress.

Lepidium sativum.

ဝမံနီ၊

RED GOURD, OR SQUASH GOURD.

A species of large pumpkin or gourd, is a common vegetable seen on the tables of Europeans. "When boiled," says Wight, "it resembles in taste a fine tender carrot."

Cucurbita maxima.

ရွှေရင်း၊ လှော်၊ လှော်

WHITE GOURD, OR PUMPKIN.

The Karens and Burmese cultivate a species of pumpkin or gourd, never eaten by Europeans, which they esteem a valuable addition to their curries.

Benincasa cerifera.

ကျောက်ပုလင်း

၂၇၇.

လွန်နီ

SNAKE GOURD.

A curious contorted gourd, peculiar to India, is in very general demand for vegetable curries. The plant is of easy culture on trellises around the doors of the native cabins, and the fruit often grows two feet long, beautifully striped, small, and tapering, so that streaming down from the trellis, they immediately remind one of striped snakes suspended from the foliage of trees.

Trichosanthes anguina.

ပဲလင်လွှဲ

ရသံခါး

ခွက်လက်တက်ဂုဏ်

BITTER GOURD.

This is a very bitter gourd of the same genus as the preceding, but unlike that, this is eaten by the natives only.

Trichosanthes cucumerina.

သဘွတ်ခါး

၁၈၁၁

တက်ခါး

BOTTLE GOURD, OR WHITE PUMPKIN.

The bottle gourd grows luxuriantly, and several varieties may be seen about our Indian cabins.

Lagenaria vulgaris.

ဘူးဆင်လွှဲ

ဘုံဂါးဖျော့

ခွက်တက်

PENTANDROUS LUFFA.

This is a long gourd with a striped skin, considered by the natives a delicious vegetable.

Luffa pentandra.

သဘွတ်

၁၈၁၁

တက်ခါး

ANGULAR LUFFA.

This luffa gourd has ten sharp ridges by which it may be easily recognized, and Roxburgh says that with a little butter, pepper and salt, "it is little inferior to green peas."

Luffa fœtida.

Luffa acutangula

သတ္တတ်ခပ်ခပ်၊ ချို၊ ချို၊ တုလွတ်ကုတ်တက်ရှု၊

MOMORDICA.

Two or three varieties of momordica, a fruit the size of a cucumber covered with tubercles, are used in curries.

Momordica Charantia.

ကျက်ဟင်းခါး၊ ကျင်းခါး (Taroy) ဘုခါး၊ ခိခါး၊

DICECIOUS MOMORDICA.

A species of momordica with small muricated fruit, is occasionally eaten by the natives.

Momordica diæca.

ဝုလ်၊ ဖုာ်ဖုာ်၊ ဝံလ်၊

CUCUMBER.

Cucumbers are consumed in immense quantities, but the Karens and Burmans seem to prefer them when large and yellow, rather than pluck them when green and tender.

Cucumis sativus.

" *utilissimus.*

သခွား၊ ဘုာ်ခွား၊ ခံခွား၊

BRINJAL.

The vegetable egg, or brinjal, is one of the best vegetables in India. Several varieties are extensively cultivated and eaten by all classes.

Solanum Melongena.

ခရု၊ ဗု၊ သက်၊

TOMATO.

The tomato or love apple, another of our delicious vegetables, abounds in Ava, and is cultivated to a limited extent in many of our gardens.

Lycopersicum esculentum.

ခရန့်မြေပုံ၊ သင်္ကါယ်၊

OKRA.

The okra plant of the Southern States of America, as universally abounds in these Provinces, and all over the East, as it does in the West Indies.

Abelmoschus esculentus.

Hibiscus “

ရမ္မတိ၊ ရမ္မတေ၊ ဘဟျာဟျာ၊ သင်္ဘိုဉ်သျှ၊

MALABAR NIGHTSHADE.

This is a twining plant, with succulent stems and leaves, that the Burmese cultivate for spinage; and it is said to be not inferior to the common English spinage, which belongs to the same natural family.

Basella alba.

ရှင်ဘိုဉ်၊

NEPAUL SPINAGE.

Several varieties of the edible amarantus are cultivated and eaten like spinage, and are sometimes denominated Nepaul spinage. Roxburgh says of one variety: “The tender succulent tops of the stems and branches, are sometimes served up on our tables, as a substitute for asparagus.”

Amarantus oleraceus.

ဟင်ကနွယ်၊ မအာ၂၇၊ ကမ္ပာလီ၊

SPINOUS AMARANTUS.

A spiny species of amarantus grows spontaneously and is a common weed in some parts of the Provinces, which the natives use for a pot-herb.

Amarantus spinosus.

ဟင်ကနွယ်၊ မအာ၂၇၊ ၁၁၁၊ ၁၁၂၊ ကမ္ပလီတစွာအိဉ်၊

ONION.

The common English onion is sometimes cultivated, but the principal part of the onions seen in the bazars are brought from Rangoon, and it is believed are of a different species.

Allium ascalonicum?

ကျက်သွန်နီ၊ သာသံသ့သ့ဝဇာ၊ ပသားဂီ၊

LEEKS.

The native inhabitants of Tenasserim are as much attached to leeks, as the Israelites were to the leeks and onions of Egypt, and they abound in their gardens.

Allium Porrum.

စောကျက်သွန်၊ သာဝါ၊ ပတျာ၊

PURLANE.

Purslane is as common a weed in these Provinces as it is in America, and is used by the natives for a pot-herb.

Portulaca oleracea.

ဖြေပျက်၊ သာဗျံဝဗျံ၊ ကပျီလိ၊

WATER DILLENIA.

A species of dillenia always found on the borders of streams, hence called water dillenia by the Karens, produces a large fruit, which is brought to bazar green, and considered a favorite vegetable with the natives.

Dillenia.

သပြေ၊ ဝဗျာ၊ ဟိန်ထံ၊

BAMBOO SHOOT.

The young shoots of some species of bamboo are sold in market for a vegetable. They are also used by Europeans for a pickle, and a preserve.

Bambusa.

ဝါးမြစ်၊ ဝါးပု၊ ဝဗ်ဘိဗ်၊

N^o

SEDEE ROOT.

The roots of a species of sedge are found among the vegetables, though they taste like filberts.

Cyperus.

ဝက်မျှင်ဥ၊ ဝက်မျက်စာ၊ ပၤ၊ ဆွဲဝ်စုး

LETTUCE.

Lettuce is cultivated to a limited extent by Europeans.

Lactuca sativa.

MUSHROOM.

Mushrooms are often seen in the bazar, and the Karens have names for sixty-four different species of mushrooms and the allied fungi. They distinguish the edible from the poisonous kinds, they say, by touching them with the lime that they eat with the betel. If the fungus turn red when touched, it is regarded as poisonous. But they are so careless or ignorant, that sickness and death often ensue after eating them.

Fungales.

ခွံ၊ ပၤ၊ ကုလ်

SPATHIUM ROOT.

There are one or two species of spathium, plants that grow in the water; one of which Voigt says, is found on the banks of the Irrawaddy, and has roots "nearly as good as potatoes."

Spathium chinense.

CAPSICUM.

Large quantities of Cayenne-pepper, or chillies, of which we have two or three species, enter into all the native dishes; not in the form of pepper, but the fruit stewed or roasted is eaten with the food.

Capsicum.

ငရု၊ အဂၤ၊ မိၤထဲသၣ်၊ မိၤဝ်သၣ်

CEREALS.

The cereal grasses commonly grown within the tropics, do not appear to be as nutritious as those of temperate climates. Rice and millet are not equal to wheat and oats. The Burman books say, there are seven kinds of *saba*, or cereals, in which they include *poi* or beans.

ကောက်	rice	ပုဂ္ဂတ္တ	(Pali.)
သလေး	"	သာလိ	"
ဆူးနုထဲကောက်	wheat	ဂေါ်ရ	"
ပုယော	barley	ယာ	"
မြောင်း	millet	ဝရက	"
လူး	millet-paspalum	ကဒြိသ	"
ဆပ်	millet-panicum	ကတ်	"
ဝဲ	beans and peas	ဆပရတ္တ	"

RICE.

Rice is universally cultivated, and cultivation has produced many varieties. The Karens have distinctive names for more than forty, and Karen mountain rice is preferred by many to that which is raised by the Burmese on the low lands; yet it is said not to be so nutritious, and on this account bears a less price in bazar. It is of all colors from ivory-white to coal-black.

Of the black rice the Karens prepare a kind of bread, which to them supplies the place of gingerbread. A portion of seethed rice is poured into a large mortar with a prodigious quantity of sesamum seeds. Two women then take their strong ebony pestles and pound it, striking alternately until it becomes a light bounding mass. It is then thrown upon the eating stand, when the whole family seat themselves around it in oriental style, and dissever it with their sabres.

The Karens have another mode of preparing this kind of rice, which is particularly convenient for travellers. A quantity unboiled is thrust into joints of small bamboo, a

little water added, and the orifice closed up. It is then roasted, and if eaten with a little butter and salt it is most delicious. The Karens select only two varieties of bamboo for this purpose, and these impart to the rice a sweet delicate flavor.

Oriza sativa.

ကောက်စပါး စပါး သဇာလ်း ဟေ့. ဘု

HOLCUS MILLET.

A species of millet of the Linnean genus holcus, is often grown by the Karens, and occasionally by the Burmese. This is the millet designated in Ezekiel 4 : 9.

Sorghum vulgare.

Holcus Sorghum.

ပြောင်း ခွံခွံ (Tavoy.) ခွံ. သွံ

PANICUM MILLET.

One or more species of millet belonging to the genus panicum, are raised to a limited extent.

Panicum.

ပြောင်းလယ်ကောက်. ဆပ်ခွံ. ခွံမာ. ပုသမာ.

SORGHUM MILLET.

A millet plant is occasionally seen, which in the United States is called "broom-corn," it being there manufactured into brooms.

Sorghum saccharatum.

ပြောင်း ဟေ့. ဟေ့

COIX MILLET.

A species of coix, Job's tears, has large esculent seeds which are parched, like Indian corn in America, and, they are often for sale in the bazars.

Coix indica?

ကလိပေါက်ပေါက်. ဟေ့. ပုတံ.

MAIZE.

Maize, or Indian corn is more generally grown than millet, and "green corn" is a common article in market, but it is hard and insipid, decidedly inferior to American corn.

Zea Mays.

ပြောင်းပုစိး ဟော့ခါး. ဘုခါး

WHEAT.

Wheat is grown largely in Burmah, but I have never seen it under culture in these Provinces, although Commissioner Durand made an attempt to introduce it. I have no doubt, however, but on the Karen mountains the cultivator would reap an ample harvest.

Triticum vulgare.

လူးနတ်ကောက် (*Classic name.*)

ကုလားစပါး (*Vulgar " "*)

ဂျုံစပါး (*Bengali " "*)

ဟော့ခါး. ဘုခါး

BARLEY.

"This last grain," says Crawford, speaking of barley, "is not known to the natives, and when we pointed it out, they imagined it to be unripe grains of wheat." Notwithstanding this testimony, the Burmese have a name for barley which frequently occur in their books. It constitutes one of their seven kinds of *saba* or cereal grasses, and its corresponding Pali name is identical with the Sanscrit name of barley.

Hordeum hexastichon.

မုယော မာယော. မုယိး

BAMBOO SEED.

In times of scarcity the seeds of the bamboo have often been used by the Karens as a substitute for rice.

Bambusa.

ဝါး. ဝ. ဝဉ်း

GRASSES.

Griffith collected nearly one hundred different grasses in the Provinces, but I am not aware that the description of a single species has ever been published.

CHRYSOPOGON.

The most common grass on the Coast is a species of the modern genus *chrysopogon*, concerning which, Roxburgh well remarks : " Its seeds are exceedingly troublesome to those who walk where it grows, as they stick in the stockings, and produce a disagreeable itching."

Chrysopogon acicularis.

Andropogon. "

ငံလှိုင် ကုဇာဒေါ့. မိုက်ကွက်လှိုင်

PANIC GRASS.

Several very common grasses belong to the genus *panicum*. One species grows about three feet high, and after a field has been subdued, it will often spring up so thick that every thing else is destroyed. Cattle eat it both dry and green.

Panicum.

CREEPING PANICUM.

A creeping species of *panicum* is one of the most abundant grasses on the Coast, but it is much less conspicuous than many others.

Cynodon Dactylon?

Panicum. "

GUINEA GRASS.

Guinea grass is grown by a few Europeans, and it does as well as the indigenous species.

Panicum jumentosum

ANDROPOGON.

Several species of *andropogon*, as the genus is described by Roxburgh, are among our most abundant grasses.

Andropogon.

SETARIA.

A species of setaria, which the Karens call "horsetail grass" is scattered all over the Provinces.

Setaria.

ELEUSINE.

Tufts of eleusine are conspicuous every where among other grasses.

Eleusine indica ?

ဆဲခဲၤကုတ်၊ ဝံတဲး။

• MEADOW GRASS.

Meadow grass has one or two representatives among our most conspicuous grasses.

Poa.

PASPALUM.

One or more species of paspalum are products of our fields.

Paspalum.

ANTHISTIRIA.

In the Karen jungles I have noticed a large grass with lax panicles and very long awns belonging to this genus.

Anthistiria.

INDIA CLOVER.

The most valuable grass in the country is not a proper grass, but, like the English clover, is a leguminous plant. It is a species of *hedysarum*, "which in India," says Dr. Wight, "supplies the place of the species of *Trifolium* and *Medicago* in Europe." In other words, the farmer finds it a good substitute for clover and lucerne; and there is another leguminous plant at Tavoy, *Smithia sensitiva*, which is said to make "excellent hay."

MEDICINAL PLANTS.

The Provinces are rich in medicinal plants, both in number and quality. Lindley's *Flora Medica* contains descriptions of all the known medicinal plants in the world, and more than a tithe of the whole number may be seen growing on the Tenasserim coast. Were we deprived of European drugs, and left to our own resources, we could find good substitutes for almost every article in the Medical Flora.

Besides those to which separate paragraphs have been allotted, the bark root of the red cotton tree, and the roots of the clitoria are emetic; and the root of *Tylophora vomitoria* has been pronounced by Indian practitioners not inferior to ipecacuanha for any of the purposes to which that medicine is applied. *Cassia fistula* pods, the chebula fruit, the root of the heart seed, the seeds of the sapodilla, Otaheite gooseberry, and physic nut are aperient or purgative. The gum of the white cotton tree, the bark of *Wrightia antidysenterica*, and the peel of the mangosteen are prescribed in bowel complaints. The green fruit of the papaya, the root of the Persian lilac, and the fruit of the Rangoon creeper are vermifuges. The bitter roots of *Sida acuta*, and *Tephrosia purpurea*, and the seeds of the musk-mallow or musk plant, are deemed cordial and stomachic, and the bark of *Guilandina Bonduc*, is considered a good substitute for cinchona where that cannot be had. The decocted leaves of the goat-footed ipomœa are used as an external application in cholic. The leaves of *Vitex trifolia* are applied in diseases of the spleen. The bark of the white plumbago root will raise a blister, it is said, almost as quickly as cantharides.

The oil of the cashew nut "has been used successfully in eating off ring-worms, cancerous ulcers and corns." The mango tree exudes a large quantity of gum-resin resembling bdellium, and our indigenous pine can furnish any quantity of turpentine. The bark of the root, the leaves, and the fruit of the Bengal quince, are as popular

with the natives, as the root, bark, flower, and fruit of the pomegranate, which have been famous for their medicinal properties ever since the days of Celsus.

GAMBOGE.*

Three works in my possession describe gamboge, each as the product of a different tree; a fourth represents all to be wrong, and a fifth suggests a different plant still. One refers it to *Cambogia gutta*, a plant which, as described by Linnæus, has probably no existence. He described a Ceylon plant, "and it is now quite evident," says Dr. Wight, "that the character of the flower and ovary is taken from one specimen, and that of the fruit from a different one, owing to the imperfection of his specimens, and his not being aware, that the lobes of the stigma afford a sure indication of the number of cells of the fruit."

Another, refers it to *Garcinia Cambogia*, but Dr. Wight says, that the exudation of this tree is "wholly incapable of forming an emulsion with the wet finger," a statement known to be correct. The tree is very common in the Tenasserim Provinces, but the bright yellow exudation it produces, is certainly not gamboge.

A third, refers it to *Stalagmitis Cambogioides*, but Dr. Wight remarks: "The juice of this tree differs so very widely in its qualities from good gamboge, that it can never be expected to prove valuable as a pigment."

Dr. Graham has described a Ceylon tree under the name of *Hebradendron Cambogioides*, which is said to produce good gamboge; but no gamboge has ever been exported into the English market from Ceylon. Thus it would appear, to use the language of Dr. Wight, that "the tree, or trees, which produce the gamboge of commerce, is not yet known."

Dr. Helfer, who was employed by government as a scientific naturalist in these Provinces, reported: "The gamboge of this country dissolves very little with water, and consequently does not yield a yellow emulsion as the common *guttifera*. It will never serve as a colour,

* Extracted from an article communicated by the author, in the Journal of the Asiatic Society for July 1847.

but promises to give a very beautiful varnish." This statement was controverted by a writer in our local periodical at the time, who said he had obtained "fine gamboge of the very best description" from our jungles; in which he was no doubt correct, but he erred when he added, that it came from the "true *Stalagmitis Cambogioides*;" for that plant has a quinary arrangement of its flowers, while the arrangement of the flowers in those that produce gamboge, in these Provinces, is quaternary.

The hills that bound the valley of the Tavoy river, on both sides, from their bases to their summits, abound with a tree which produces a bright gamboge. It is Roxburgh's *Garcinia pictoria*, which he knew produced gamboge, but which he said was liable to fade. As soon as I had satisfied myself of the identity of the trees by an examination of the inflorescence of our plant, compared with Roxburgh's description; I coloured a piece of paper, one band with this gamboge, and another with the gamboge of commerce: and subsequently exposed both to the weather equally for more than twelve months, but without being able to discover that one faded any more than the other.

South of the mouth of Tavoy river, and throughout the province of Mergui, there is found on the low plains at the foot of the hills, and on the banks of the rivers, almost down to tide waters, another species of garcinia that also produces good gamboge. I have no doubt but it is the tree from which Dr. Griffith furnished Dr. Wight with specimens, and of which, the latter says, "I refer doubtfully to Wallich's *G. elliptica*." We will call it then *G. elliptica*, a species which Dr. Wight has on his list of "species imperfectly known." The foliation and female flowers are, however, very well described, and to complete the description, I may add, the male flowers are pedunculated, but the peduncles are short, and they might be characterized as sub-sessile. The anthers, like those of the female flowers, are sessile, depressed or flattened above, and dehisce circularly. The ripe fruit is globose, and not furrowed.

Neither Wallich, Wight, nor Griffith appear to have been at all aware that gamboge was a product of this tree.

Dr. Wight, in a recent number of his Neilgherry Plants, says : "Two species of the genus *garcinia* are known to produce gamboge, most of the others yield a yellow juice, but not gamboge, as it will not mix with water." The species which he has described as producing gamboge, and to which I suppose he refers, are *G. gutta*, or *H. Cambogioides*, (Graham,) and *G. pictoria*, (Roxburgh.)

In its appearance to the eye, and in its properties as a pigment, I have failed to discover the slightest difference between the exudation of this tree, and the gamboge of commerce. The Burmese priests use it occasionally to dye their robes, the Karens their thread, and it serves equally well in colouring drawings. It is also used by the native doctors in medicine, but not extensively.

Dr. Lindley, in his new work the Vegetable Kingdom, says : "The best gamboge comes in the form of pipes from Siam, and this is conjectured to be the produce of *Garcinia Cochinchinensis*." Now as *G. elliptica* is spread all over the province of Mergui, is it not probable that it also extends into Siam, and that the Siamese gamboge is the product, a part at least, of this tree ?

Specimens of the gamboge were sent up with the above communication to Calcutta, and the Secretary of the Asiatic Society wrote in reply : "Our best botanists here, consider that you have hit upon the true tree at last."

Garcinia elliptica.

သနတ်တော်၊ ဘိဟုမာ၊ သဲဘိမုန်ဒဲဒိန်၊

Garcinia pictoria.

သနတ်တော်၊ ဂျီမာရ၊ သဲဘိမုန်ပြီဇီ၊

CAMPHOR.

One of the most abundant weeds throughout the Provinces is a species of *Blumea*, that grows six or eight feet high with leaves like mullen, which, when bruised, emit a strong odour of camphor. Many years ago the Tavoyers informed me, that they were in the habit of making an impure camphor from the weed by a very simple process ; but Mr. O'Riley of Amherst was the first to make a good

article from it, and to bring it to public notice. He made more than a hundred pounds, and the specimens which he sent to Calcutta were reported: "In its refined form, it is identical in all its properties with Chinese camphor."

The plant is so abundant, that these Provinces might supply half the world with camphor. Wherever the trees are cut down, this weed springs up, and often to the exclusion of almost every thing else; so that an old clearing looks like a field under cultivation.

Mr. O'Riley sent flowering specimens of the plant to Dr. McClelland for identification, who forwarded them to Dr. Voigt of Serampore, and subsequently reported: "Dr. Voigt states that it belongs to De Candolle's genus *Blumea*, and is so far as he can see, a new species." It is without doubt the same plant as that which appeared in Wallich's Catalogue a quarter of a century ago, as *Conyza grandis*, and which De Candolle subsequently described as *Blumea grandis*. Wallich's specimens were from Tavoy, without flowers, and DeCandolle describes the leaf as nine inches long with the petiole, by three wide, ("cum petiolo 9 poll. longa, 3 poll. lata,) serrated, and bearing on the petiole five or six remote linear acute lobes, ("petiolo lobulos 5—6 distantes lineares acuos gerentibus,) which corresponds very accurately with some specimens of our camphor plant, but it does not correspond to any other species of *Blumea* in the Provinces with which I am acquainted.

Blumea grandis.

မှီခါးတံ၊ တလင်ကျင်ကျင် (Tavoy.)

ဖာမာရ်၊ ဖာမာရ်၊ မိဗု၊

မရံ၊ Camphor ကမ္ပရံ (Pali.) မြို့၊ ဖွာ.

GUM KINO.*

Dr. Royle, in a valuable article on gum kino, ostensibly enumerates all the various regions from which it has been imported into England; but does not mention it as being a product of the Tenasserim Coast. Yet long before Dr. Royle compiled that communication, more than one

* Extracted from an article communicated by the author, in the Journal of the Asiatic Society for August 1849.

consignment had been made by parties in Maulmain, to houses in London, of gum kino to the amount of a thousand pounds.

It was brought to Maulmain by an English merchant from the Shan States, and stated by him, as our Commissioner at the time informed me, to be the production of the pa-douk, the same tree as the one in Maulmain thus denominated by the Burmans. Several years before, I had directed attention to this tree as producing an astringent gum resembling gum kino, but the medical officer, to whom I submitted specimens, said it was "a kind of dragon's blood." However, after Dr. Morton came to the Provinces, he tried it in his practice, and found it, in its medicinal virtues, identical with the gum kino of the druggists.

The next inquiry that arises is, for the genus and species of the pa-douk. When I first came to the Coast, all the English residents of my acquaintance called it "Burman senna," and the surgeon of the station told me that he believed it was a species of senna. Dr. Malcom, in his Travels, writes: "Pa-douk, or Mahogany, (*Swietenia Mahogani*) is plenty in the upper provinces, especially round Ava, found occasionally in Pegu." In a native Pali dictionary, found in the Burmese monasteries, pa-douk stands as the definition of *pe-ta-tha-la*, and the corresponding Sanscrit word in Wilson's dictionary, is defined *pentaptera*; but the pa-douk does not belong to that genus. In Piddington's Index, however, *peetshala* stands as the Hindee name, and in Voigt's Catalogue, *pee'-sal* as the Bengalee name of *Pterocarpus marsupium*; and this brings us nearer the truth, for pa-douk is a name common to two different species of *pterocarpus*, but which look so much alike that they are usually regarded as one species.

One has "long, waving branches, with their extremities generally much drooping, racemes axillary, flowers numerous, deep orange yellow, and very fragrant, filaments ten [often] united into two equal distinct bodies of five each; style rather shorter than the stamina; and stigma acute;" which is the description of *P. indicus*; but on full examination I think it is the species

described by Dr. Wight as *P. Wallichii* that was marked in Wallich's Catalogue as *P. dalbergioides*. There are, however, several points of difference, but not more than there are between Wight's description, and the coloured drawing that he gives of this same species. In the drawing, the leaflets are pointed wholly unlike our plant, but in the letter-press description there is an exact correspondence—in the drawing, the stamens are represented as divided one way, in the description another, and both modes of division, with some others, are seen here on the same tree. This loose way of describing and figuring plants makes it exceedingly difficult for an out-door botanist to identify nearly allied species with book descriptions, made perhaps originally from isolated dried specimens.

The other species has leaflets which correspond both to Roxburgh's description, and to Wight's figure of *P. dalbergioides*; and though it differs in some other respects, yet I think it is the same tree.

Both these species produce an astringent gum, but which, has been exported for gum kino, or whether a mixture of both, which is most probable, I am not able to say: possibly neither. It may be that *P. marsupium* is found in the Shan states, for it grows in Assam, where it would doubtlessly be called pa-douk by a Burman. Be that as it may, it is certain that these Provinces can furnish the commercial world with a large quantity of gum kino. The exudation of our pa-douk, one of the most abundant forest trees, has been proved by experiment, to possess all the properties of gum kino; while the product of the neighboring provinces, whose only avenue to market is through our territories, has been bought by the London druggists for the gum kino of the Pharmacopœia.

Pterocarpus Wallichii.

“ *dalbergioides.*

ပတောက်။ ရဲရဲရဲ။ ရဲရဲရဲ။ ကျိကျိ။

PULAS KINO.

The exudation of the butea tree, or pulas kino, when exported to England a few years ago was recognized “as being the gummi rubrum astringes” of the old druggists.

M. Guibourt of Paris, to whom some of it had been sent, states his opinion in his work on drugs, that it is the original "kino which had entirely disappeared from commerce, and was once so much valued, as to be sold for nearly a guinea a pound." Amherst Province can furnish almost any quantity of the article, the tree which produces it being one of the most common denizens of our forests.

Butea frondosa.

ပေါက် ဗမာ့ဝံ့အံ့ ဖိထိန်ကီးဖိမိန်

DRAGON'S BLOOD.

There is a species of ratan in the forests, which the natives call "Red ratan," that produces a red exudation like dragon's blood.

Calamus Draco?

ငိုဝ်းခိုး ဂျီဝော ဝှံးခိုး

LIQUID AMBER.*

"Did you ever see in this country the tree which produces the balsam of Tolu?" a gentleman once asked me. "No," I replied, "I never did." "I have one in my compound," he continued; but unfortunately his compound was two hundred miles distant. Years passed away, and I found myself beneath this tree in flower, and soon discovered that it was not *Myrospermum toluiferum*, but *Liquidamber Altingia*; and that it produced not balsam of Tolu, but liquid storax.

The tree is indigenous on the Coast, and in some sections is quite abundant. A considerable stream in the province of Mergui derives its name from this tree, in consequence of its growing so thick on its banks. It seems to have escaped the notice of Dr. Helfer, for, if I recollect right, it is not once alluded to in any of his reports, nor has it ever been brought to notice by any one; if we except a Catholic priest, a resident of Rangoon, who has introduced it in a little Burmese medical treatise, that was lithographed a few years ago by Col. Burney, who took a lithographic press with him into Burmah.

* Extracted from an article communicated by the author, in the Journal of the Asiatic Society for June 1848.

This gentleman, however, seems to have mistaken the tree, for he describes it as the one that produces the balsam of Peru, *Myrospermum peruiferum*, and which belongs to a different natural family. The medicinal properties of their exudations too, are materially different. Liquid storax, the production of this tree, is described by Lindley, merely as "a stimulating expectorant substance—influencing the mucus membranes, especially that which lines the air passages." The writer of the Burmese medical treatise recommends the exudation of the tree for the usual purposes to which the balsam of Peru is applied, under the illusion that it is the same substance!

Here is a fine illustration of the fallacies of medicine. It is probable that this balsam has been used in all the various cases many times by the author, and quite as much good done, and as wonderful cures effected, as if he had used the veritable balsam of Peru. And the same glorious effects are still being produced, for the book is in the hands of many natives, and is highly valued; but no part more so than this, because it points them to a production of the country, while most of the medicines mentioned are foreign products.

Liquidamber Altingia.

နီတရတ်

ဂုံရေသ.

နီတရတ်

INDIAN GUM ANIME.

In Hindustan, *Vateria indica* produces a resin which is sometimes called copal in India, and gum anime in England; but it does not appear to be known that in these Provinces, another species of the same genus yields almost a precisely similar resin.

When in bloom the tree is quite ornamental, and diffuses the fragrance of its flowers for a great distance around.

Vateria Roxburghii.

လက်တောက်

AMERICAN GUM ANIME.

The gum anime, or Courbaril locust tree, was introduced by Major Macfarquhar, and is easily propagated.

Hymenæa Combaril.

ALOE.

A species of aloes is often seen growing in gardens, and the drug is also imported from Hindustan.

Aloe soccotrina.

မုတ်

ASAFÆTIDA.

Asafoetida is much used by the Burmese doctors, but the gum is imported.

Ferula Asafoetida.

ရှိန်နီ. Csl. သံခိန်. တိန်ခိန်.

MANNA.

There is a tree scattered on the Karen mountains, which in the dry season exudes a sweet substance resembling the manna of the shops. I have observed it, in some instances, where it had dropped from the branches all around the base of a large tree like rain; and again, where it had gushed out of the trunk like a large mass of gum arabic. I have never seen the tree either in flower, or fruit, but think it belongs to the myrtle tribe, a family that produces manna in New Holland.

CINNAMON.

The mountains that separate the valley of the Tenasserim from the waters that fall into the Meinam produce a species of cinnamon, the bark of which is equal to some of the inferior kinds of cinnamon, or cassia bark, that is sold in the shops. The Karens in Tavoy sometimes collect it, and chew it with betel.

Cinnamon iners.

သစ်ကြံ့ဖို. ခဏ္ဍုရ. ကခါဆု.

CLOVES.

The clove tree may be seen in a few gardens on the Coast, and cloves are abundant in the bazars.

Eugenia caryophyllata.

Caryophyllus aromaticus.

လေးညှင်းပွင့်. လဝံ. (Pali.) ဓာဝဒ္ဒိဂဟု.
ကိဝိကဘိ.

ALL-SPICE ?

On the sides of some of the highest mountains in the province of Tavoy, I have repeatedly met with a tree, but never saw it either in fruit or flower, which the Burmese call "wild clove tree." The young branches and the leaves taste very strongly of all-spice.

Eugenia. (Pimenta?)

လေးညင်းပိုင်း။ မော့ဝ်။ ကီဝ်။

NUTMEG TREE.

Within a dozen years, the culture of the nutmeg tree has been successfully commenced both at Mergui and Maulmain. There are two or three large nurseries belonging to natives behind the hill at Maulmain, where the trees appear to thrive; and there is a plantation containing some thousands of trees at Mergui belonging to Baron des Granges, where the trees were beginning to bear several years ago; but the nutmegs can be imported from Penang cheaper than they can be sold at a remunerative price in these Provinces, so there is little prospect of the spice plantation increasing.

Myristica moschata.

မာဒိဗိုလ်။ မာဒိဗလ်။ (Pali.)
ဝပ်ရုံမော။ မာတံးမိဉ်။

MACE.

Mace, which is the aril of the nutmeg, appears to have been originally regarded by the natives as its flower, for its Burman name signifies "nutmeg flower."

မာဒိဗိုလ်ပွင့်။

LIGN-ALOES.

The fragrant substance called lign-aloes, or wood-aloes, is offered for sale in all the bazars on the Coast, and is the produce of a tree that grows on the Mergui Islands. It is imported into Mergui by the Selungs, who, as they profit from the trade, endeavour to keep all in ignorance of the tree from which they obtain it.

Gesenius says the Hebrew and Greek names are "derived from the Indian name of the tree, *agil*, Sanscrit *agaru* and *aguru*." Had he read Pali he would have been able to approach the word nearer than he has done, through the Sanscrit, for there besides *agaru**, the Sanscrit word, we have *agalu* and *aggalu*,† which come sufficiently near the "Indian name *agil*," and the Greek *agollochon*‡; but it would take a pretty thorough Etymologist to get aloee, the New Testament word, out of any of them. There is, however, another Sanscrit and Pali word with which Gesenius does not appear to have met, *lauha*.§ This is manifestly the parent of aloee, and by transposition, not uncommon in Hebrew, of the Hebrew name also.

Although rendered aloes in the English version, no two plants are more dissimilar than this, and the common aloes.

Aquilaria Agallocha ?

Aloexylon Aggallochum ?

အကျော်

ဒဓဇ

အကျော်

SANDAL WOOD.

Sandal wood imported from Hindustan is constantly for sale in the bazars, being a favorite cosmetic with Burmese ladies.

Santalum album.

စန္ဒကုဿ

စန္ဒန (Pali.)

စန္ဒကုဿ

စန္ဒကုဿ

WILD SANDAL WOOD.

An inferior kind of sandal wood is produced by a tree in the southern part of Mergui Province, and forms an article of commerce.

Santalum.

စန္ဒကုဿ

* အကျော်

† အကျော် and အကျော်

: This goes to show with other things, that the Greeks were connected in India with those that spoke Pali rather than Sanscrit.

§ လောဟ

COSMETIC BARK.

The fragrant bark of a tree which is indigenous in Burmah above Rangoon, is more universally used for a cosmetic than sandal wood. A single specimen has been shown me in Maulmain, which is a very ornamental fragrant flowering shrub of the citron tribe.

Murraya paniculata.

သနးကား ဘုဒ္ဓာ သနးခါး

COSMETIC TUBERCLES.

An inferior cosmetic wood is seen in market, which is the tubercle of some plant. The Burmese appear, from their name, to regard them as produced by a species of erythrina, for they call them "erythrina thorns;" but I know the plant to be a creeper, and suspect that it is

Toddalia aculeata.

" *floribunda.*

ကသပ်ဆူး

CRINUM BULBS.

A dried fragrant substance is seen among the native drugs which is imported. No one seems able to tell what it is, but on tracing its Burman name through the Pali into the Sanscrit, I find Prof. Wilson defines it, with some doubt, as the bulb of a species of crinum.

Crinum.

ကမ္ဘလုဗေဗိဉ်း

MERGUI COSMETIC WOOD.

There is a fragrant cosmetic wood sold in bazar, which is said to come from Mergui, but I never saw the tree.

Xanthoxylaceæ ?

တောင်လနီကြီး

OPIUM.

I have never seen the poppy under culture, but opium is eaten to a very considerable extent by the Burmese, and the drug is easily procured.

Papaver somniferum.

ပိန်း ဟိ့. ယံ.

BHANG.

It is a singular fact that the hemp-plant in tropical countries exudes a gum, that is "a very powerful stimulating narcotic," which it does not produce in cold countries. The dried leaves under the name of bhang, partaking of this narcotic principle, are used all over India as a substitute for opium, to produce intoxicating effects. Under the Burmese government at Tavoy, no one was allowed to cultivate the plant without a licence from Government. Sometimes a general permission was given, and at other times a general prohibition would be issued.

Cannabis sativa.

ဆင်.

TOBACCO.

Tobacco, which was introduced from America within a few centuries, is now more universally used in Burmah, than it perhaps ever was in its native country. The Karens raise it for their own consumption, and the Burmese both cultivate it, and import it from Rangoon.

Nicotiana Tabacum.

ဆေး။

ဗာဂေ့.

ကသိပ်းတသိပ်း.

THE WHITE THORN APPLE.

The white datura has little to recommend it in point of beauty, or pleasantness of association, yet we find it celebrated by Heber in his "Walk in Bengal."

"While to the cooler air content
The broad datura bates her breast,
Of fragrant scent, and virgin white,
A pearl around the locks of night."

It is often seen blooming around native dwellings, and may possibly be used in Tenasserim for the same bloody purposes as in India. The common stramonium of Europe and America "is perhaps only a variety."

Datura Metel.

Datura alba.

ပမိုင်းသိတာ။ ပမိုင်းဖြူ။

ပမိုင်းသီး။ (Tavoy.)

ဗုဗျာ—ပမုမိာ်.

သင်္ကါဏ္ဍိ.

PURPLE FLOWERED THORN APPLE.

Both the single and double flowered varieties of this species may be often seen near Burman houses, and children not knowing its poisonous character, sometimes eat the fruit with very serious effects.

Datura fastuosa.

ပရိုင်းနို

ပဓာနာဒ္ဒါ

သက်တူဂါ

NUX VOMICA.

A Medical Botany before me says, the *Nux vomica*, or poison nut, grows "chiefly in Ceylon and Malabar, occupying sandy situations." It is a very common tree on the rocky sides of the hill back of Maulmain. The reputed property of the wood to cure the bite of venomous snakes, as stated by Lindley, is never heard of here, and is doubtless quite apocryphal.

Strychnos Nux vomica.

ခလင်း

ခမာင်း

COCCULUS INDICUS.

This twining shrub, well known for its poisonous seeds, Dr. Helfer reports as indigenous in the Provinces, but I have never observed it.

Anamirta Cocculus.

SENNA.

I have never seen the true senna under culture, but the dried leaves are constantly for sale.

Cassia elongata.

ငွေကျိုင်း

FÆTID CASSIA.

The fætid cassia is one of the most abundant weeds in this country, and it has a place in the *Materia Medica*, because its leaves are used to adulterate Aleppo senna, and are said to be cathartic.

Cassia Tora.

ခန့်ကွဲ

တိာဇာဒ္ဒါ

ဆိပ်ဆါ

WINGED CASSIA.

This species bears a profusion of gaudy, yellow flowers, and is much cultivated by the natives for its medicinal properties in diseases of the skin.

Cassia alata.

ဝဲဝဲကြီး ဖာဂဘယဝံ၊ ဘာမဒော၊
ပိသဘေးမိတ်၊ ကသံဉ်ဉ်၊

WESTERN CASSIA.

There is a small species of cassia that I have occasionally noticed in native cultivation for medicinal uses, which was originally introduced into India from the West Indies.

Cassia occidentalis.

ကလော၊

COW-ITCH.

The cowhage, or cow-itch, with its stinging pods is very common in the Karen jungles. I believe it is the common species, but I never met with the plant in flower.

Mucuna pruritus.

ဝဲကဲမိ၊ ဇွေးေး၊ ဖာမာမာ၊ မဒမာဖံာဘာ၊ ဖျါယုဂ်၊

MYROBALANS.

Myrobalan fruit is esteemed medicinal by the Burmese, and is dried and sold among the drugs. The tree is indigenous, but not very abundant.

Terminalia Bellerica.

ဘနိင်း၊ မနိင်း၊ သိာမာ၊ မာနိင်းသုဉ်ကံ၊

BAMBOO-FUNGUS.

There is a fungus like a mushroom that grows at the root of the bamboo in these Provinces, hence called the bamboo-fungus, which is regarded by the natives as quite a specific for worms. It has also been introduced into European practice, and is regarded by some physicians as superior to any anthelmintic in the *Materia Medica*.

သမ္မိ၊ ဝါမ္မိ၊ ပာဘာမာ၊
ကုလဝဉ်မိတ်၊ ကုသဉ်မိတ်၊

IPECACUANHA.

A pretty little annual, with a small saffron and orange-coloured flower, is quite common, and is characterized as the "ipecacuanha-plant." It is not the true ipecacuanha-plant, but the root is emetic, and is used by the negroes of the West Indies.

Asclepias curassavica.

JEW BUSH.

This American plant, which is used in the West Indies as a substitute for ipecacuanha, is seen in cultivation occasionally, and in the neighborhood of Calcutta it is as abundant as a wild plant.

Pedilanthus tithymaloides.

MUDAR PLANT.

The mudar plant is propagated for its medicinal properties, which are said to be very numerous, and European practitioners recommend the juice of the plant in cases of leprosy above all other preparations. We have two varieties, one with a cream-coloured flower, and another with a black and purple tinge.

Calotropis gigantea.

ωqt.

CAJUPUT-OIL.

An elegant little tree, with birch-like bark that produces cajuput-oil, is indigenous in the Karen forests of the southern provinces, but I have not observed it north of the valley of Palouk river, in latitude about 13°.

Melaleuca Cajuputi.

CASTOR-OIL.

The Palma Christi, or castor-oil plant, is very extensively propagated by the Karens, who have two or three varieties. Until they were informed, however, by the missionaries, they were not at all aware of the medicinal properties of the plant; their object in planting the tree being, to obtain the seeds to mix with their dyes, and fix their

colours. Dr. Helfer says: "The country produces, spontaneously growing, the ricinus or castor-oil plant," but this is quite erroneous.

Ricinus communis.

ကျက်ဆူး မလေ့။ မင်းထီး။

CROTON-OIL.

The croton-oil plant is frequently seen under culture, and the seeds are administered by native doctors. When the operation is excessive, they give the patient the juice of the sour lime, which is said to counteract the effect of the croton seeds. All the plants that I have examined belong to the exotic species.

Croton Tiglium.

ခဲနီ။ ဓာတုဝေပုံ။ တနားကတ။ ကပ်နီနီ။

AVA CROTON.

Lindley says that there is an indigenous, and allied species to the preceding at Ava, which is decandrous, while *C. Tiglium* has fifteen stamens.

Croton Pavana.

MANY-STAMENED CROTON.

The Burmese cultivate another species of croton, which grows into a thick bush, and whose seeds are also a strong purgative.

Croton polyandra.

သမိတ်။

WILD CROTON.

A species of croton, whose roots are used by the natives for a cathartic, abounds in some parts, especially on the Maulmain hills. This species is not described in Roxburgh.

Croton.

သက်ရင်းနီ။ ခွဲလေ့။ ကဝင်းပီး။

RANGOON CROTON.

The natives describe another species of croton, common in the neighborhood of Rangoon, and occasionally found

✱

in the Provinces, which is a shrub, three or four feet high, with properties similar to the preceding.

Croton.

သက်ရင်းကတော်။

WOOD-OIL COPAIVA.

Wood-oil is one of the most valuable products of the Tenasserim Provinces ; and the tree which produces the best quality is one of the most widely diffused of our forest trees. It yields too, very abundantly. Dr. Helfer wrote, that one trunk would produce thirty or forty gallons each season without injury to the tree. In the reports of the Agricultural and Horticultural Societies of India, it is said : " The wood-oil, properly speaking, is a balsam, obtained from several species of dipterocarpus common in many parts of India. By distillation this balsam yields volatile oil, a resin being left behind. This oil, Dr. O'Shaughnessy found to be identical in chemical composition with that of the balsam of copaiva, and he had accordingly used it extensively in his hospital, with exactly the same medicinal effects." " Nor is this article," continues the report, " likely to become of importance in medicine only ; but also in the arts, in many of which copaiva is now used. Copaiva, by the latest ' dry price current,' was at five shillings and six pence the pound, while twenty pounds of the essential oil of wood may be obtained, of the very best quality, for about ten shillings."

Dipterocarpus lavis:

ကညည်း။

ဝုသိ။

စိသိ။

NEEM TREE.

This tree Linnæus placed in the same genus as the pride of India, which it much resembles, but the leaves are more intensely bitter. It is cultivated by the Burmese for its medicinal qualities, for which it is famous all over India. The bark has been successfully used in India as a substitute for cinchona ; the bitter oil of the fruit is a valuable anthelmintic ; the seeds are used in the destruction of insects ; and " the leaves," remarks Dr.

Wight, "beaten into a pulp, and thus externally applied, act as a charm in removing the most intractable forms of psora, and other pustula eruptions.

Azadirachta indica.

သဘောကပါး။ မေသုရေ့။ ကမာခိုက်တီး။

PENTAPTERA-BARK.

A very bitter bark is sold in market, which the natives eat with their betel. I have never seen the tree, but the fruit of it which was brought me, proved it to belong to Roxburgh's genus pentaptera.

Terminalia.

Pentaptera.

သစ်ခါးကသစ်ခါး . ဘျံ့သဖျံ့ . တကိသီး။

CHIRATA.

This well known Indian bitter is a common Burman medicine, but I have never seen the plant growing. It is considered a good substitute for cinchona, but it frequently acts as an aperient as well as a tonic. It is often confounded with another bitter, *kreet*,—*Justicia paniculata*.

Agathotes Cherayta.

ဆေးခါကြီး။ ဘျံ့သ . တသံခိုက်ခိုက်။

WILLOW.

A species of willow is one of the most abundant forest trees on the banks of inland streams; and as many of the willows are medicinal, it is very probable that this also possesses medicinal properties, but they are as yet unknown.

Salix.

ပိုဗ်မခး။ တိုကု . ပိုသလီး။

SOUTHERNWOOD.

This plant, of the same genus as wormwood, is seen in European gardens.

• *Artemisia Abrotanum.*

CUTCH.

Cutch, the produce of a species of acacia, indigenous in Burmah, is an article of merchandise, and large quantities of it are consumed by the natives with their betel.

Acacia Catechu.

ရှား၊ ဘဲလတ်၊ သီးခွံ၊

SEA-COCOANUT.

This is not the famous *Cocos des mer* of the Seychelles, so long the wonder of the world; but a tree very common in the mangrove swamps; and growing near the shore, its fruit falls into the water and floats out upon the sea, which gives rise to its name. The fruit is not edible, but is exceedingly astringent, and regarded by the natives as a specific in cholera.

Xylocarpus Granatum.

ပင်လယ်ခို၊ ပုလဲ၊ သိပြန်သိ၊

BLACK-PEPPER.

The black pepper vine is often seen creeping up the trees, but it is not indigenous.

Piper nigrum.

ငရုပ်ကောင်း၊ ပွား၊ မိန်တံလွှဲ၊ မိန်တံမိ၊

LONG-PEPPER.

Long-pepper is in the bazars, but I have never noticed it growing.

Piper longum.

ပိတ်ချင်း၊

GINGER.

Ginger is cultivated to a small extent, and some of the Chinese make a ginger preserve of the green roots, in imitation of that which comes from China.

Zingiber officinale.

ချင်းမိန်၊ ချင်း (Tavoy.) ဒါ၊ သတ္တု၊

FENNEL-FLOWER.

The seeds of this plant, which were formerly used for pepper, are valued by the inhabitants for their carminative properties, but the plant is rarely seen in cultivation. The Hebrew word, which in Isaiah is rendered *fitches* designates this plant; but not in Ezekiel, where the original word for fitches signifies spelt, a species of wheat.

Nigella sativa.

ဝဲဒ်နဲက်၊ ဝံပဗု၊ ဝဲဒ်သု၊

BETEL-LEAF.

The betel-leaf is an article of commerce, being universally chewed by the Asiatic population with areca nut and lime, to strengthen the stomach. Karens plant the vines on their uplands, where there are tall forest trees. The branches of the trunks are lopped off, leaving only the topmost boughs, and the vines readily climb up and weave their dark, glossy leaves all over the summits, making a betel-vine farm a most beautiful object. Karen boys and maidens engage in these leaf harvests with great zest, and it is not uncommon for young men, in seeking companions, to inquire who are the most agile climbers of *poo-lah*, or betel-leaf trees.

Piper Betel.

ကွဲဂွက်၊ ဝဲဒ်၊ သဘျုန်၊

WILD BETEL-LEAF.

The Karen forests produce a wild species of piper, the leaf of which is used as a substitute for the common betel-leaf.

Piper.

ဘောကွဲ၊ ဟျု၊ မွီ၊

SPILANTHES.

A species of *spilanthes* is planted by the natives for its medicinal properties.

Spilanthes acmella.

ဟင်းကလာ၊ ဟွေ့မုံ၊ ဟိကထ်ဒါ၊

CORIANDER.

Coriander seeds are used as a condiment for curries, as well as for medicine, and the plant is often cultivated by the Burmese.

Coriandrum sativum.

နီနီ ဂျဂျ နီနီနီ

ANISE.

Anise seeds are much used by the native doctors, but I have never seen the plant under culture.

Pimpinella Anisum.

ဝေန်ဝေန်

DILL.

Dill is occasionally seen, and the seeds are constantly for sale in the bazars. This plant is the *anethon* of Dioscorides; and Mathew's gospel, rendered in the received version *anise*. The Burmese do not distinguish it from carraway.

Anethum graveolens.

ဝေန် ဝေန် ဝေန်

SOWA.

This is an East Indian species of anethum, possessing similar aromatic, and carminative properties to the preceding. It is often planted by the Burmese.

Anethum Sowa.

ဝေန်

CUMIN.

Cumin seeds are a common article in the markets, and the plant, I am told, is occasionally cultivated.

Cuminum Cyminum.

ဝေန် ဝေန် (Sanskrit.) ဝေန် ဝေန်

CARDAMUM.

The Karen forests of Tavoy, and Mergui abound with cardamum plants; and while subject to the Burmese Government, the Karens were required to collect the seeds and pay them in as tribute; but they gather very few now,

as they can employ their time more profitably; and when they did collect, they were in the practice of mixing a spurious kind of cardamum with the true, the produce of a plant belonging to the genus amomum, believed to have been *A. Cardamomum*.

Elettaria Cardamomum.

Alpinia Cardamomum.

ဘာလာ။ မလ္လာ။ မလ္လာ။

SWEET CANE.

The sweet cane, or sweet flag, is cultivated by the Burmese to a small extent for its medicinal properties, which some writers say are not duly appreciated. This is the sweet cane of the Scriptures, and not sugar-cane, as some have supposed.

Acorus Calamus.

လင်လော။ လှေ့။ လှေ့။

SASSAFRAS.

A species of sassafras abounds in the jungles, which seems to possess all the properties of the sassafras of America. I have never met with the tree in fruit or flower, but the leaf shows that it is not the *Sassafras officinarum*.

Sassafras.

ဗန်သင်း။ မော်လီ။ ကီးလှို။

MINT.

Mint is sometimes cultivated by Europeans, but it does not flourish so well as in Europe.

Mentha viridis.

WILD MINT.

There is a species of wild mint in Tavoy, of which Roxburgh wrote: "This plant is very fragrant, not less so than our garden mint in Europe."

Dysophylla quadrifolia.

Mentha " "

ပင်မိန်း။ မော့မော့။

မိကဘိန်း။

GALANGA KÆMPFERA.

The roots of this plant may be often seen attached to the necklaces of Karen females, for the sake of their perfume. They also put them with their clothes, and use them to a small extent medicinally.

Kæmpferia Galanga.

ခရမ်း၊

ဇာ၊

ဆု

KHUSKHUS-GRASS.

Both Karens and Burmese cultivate little bunches of a large grass belonging to the genus andropogon, for its fragrant roots.

Andropogon muricatus.

ပန်းရင်း၊

ကံရည်၊

ကိရုန်း၊ ကိရုန်း၊

SWEET BASIL.

Common sweet basil is not rare in gardens, but I have not met with it indigenous.

Ocimum Basilicum.

LEMON-GRASS.

Lemon-grass is cultivated by the natives all over the Provinces, and a decoction made from the leaves is deemed by them of much efficacy in cholic, and similar complaints.

Andropogon Schænanthus.

တပျိုလင်း၊

မင်္ဂလာသွင်း (Taroy)

ဝဲပျို၊ ထိပ်ပိတ်တပျို၊ ခိုင်ရည်ခါး၊

WILD SARSAPARILLA.

There are two or more species of smilax in our jungles, one of which is used by the natives as medicine, to supply the place of a species of sarsaparilla, whose dried roots are sold in the bazars.

Smilax ovalifolia.

ကုက္ကု၊

လှမ္ဘာ၊

ထိပ်ကုက္ကု၊

GINSENG.

The Chinese shops have the famous ginseng always on hand, but the plant is not cultivated.

Panax quinquefolia.

LIQUORICE.

Dried liquorice is found among native drugs, but I have never seen the plant growing.

Glycyrrhiza glabra.

သဘော့နွယ်ချို၊ ဘျီပွာ်ခွာ်သံ၊ သွန်စိပ်ဝံင်သိကဘိ၊

WILD LIQUORICE.

There is an indigenous plant in the forests, the bark of whose roots have the taste of liquorice, but it does not belong to the same genus, though often supposed to be the same tree. I have not seen the flower, but the leaf and fruit would indicate it to be a species of acacia.

Acacia.

နွယ်ချို၊ ဘျီပွာ်ခွာ်သံ၊ သွန်စိပ်ဝံင်သိ၊

HEART-SEED.

The heart-seed, which has an aperient root, is raised in great quantities by the natives, but more as a vegetable than a medicine.

Cardiospermum Halicacabum.

မလသေ၊ မၤမၤ၊ မးခါး၊

GARLIC.

Garlic bulbs are always for sale, but they are imported principally from Rangoon. The natives use them both for food and medicine.

Allium sativum.

ကုက်သွန်ခြံ၊ ဘျီခံင်သွာ်၊ မသၢဝါ၊

GUM-ARABIC.

The true gum-arabic tree is not in the Provinces, but the vachellia-tree produces a gum with all the properties of the gum-arabic of commerce; and the cashew-tree, which grows all over the Provinces, "annually exudes," says Voigt, "from 5—12 pounds weight, of a fine white transparent gum, like gum-arabic, and not inferior to it in virtue or quality."

POLANISIA.

The leaves of a very common weed belonging to the genus polanisia, when bruised, are said to act as a sinapism.

Polanisia icosandra.

HELICTERES.

The dried, twisted fruit of a species of helicteres is seen among the native drugs in bazar, and is used by Burmese doctors.

Isora corylifolia.

Helicteres Isora.

သုလ်ဇျေ။

DESMODIUM.

The root of a species of desmodium is valued for its medicinal properties.

Desmodium triquetrum.

မုတ်ဆိုလွန်။ ဂျဝံဟ်ဂျ။

ကသံဉ်ကူ။

နိဉ်မီးသံဉ်နိဉ်ကိဉ်။

PARATROPIA.

The Karens make an infusion of the leaves of a species of paratropia, a plant of the ivy family, which they use for many internal diseases.

Paratropia digitata.

Paratropia venulosa.

ဘလူးလက်ဝါ။

ဒေရုရ။

ကပ္ပုရ။

ENTADA.

This magnificent creeper is occasionally seen lending its light verdure to lofty forest trees, and throwing down immense pods, often more than a yard long. These pods are filled with numerous large dark brown seeds, from one to two inches in diameter.

Though not in Lindley, yet the seeds of this plant enter into the native Materia Medica as an anti-febrifuge.

Entada Pusætha.

ကုဉ်ညဉ်း။

ဟ်ဂျ။

မဲက။

AGYNEIA.

The roots of this curious flowered plant are used medicinally by the Karens.

Agynia coccinea.

ထွင်းဆုတ်ကြီး၊ ဝဂ္ဂပါဏေ၊ မိကွင်းကသံဉ်ပွဲဝမ်းမိဉ်၊

LEEA.

A curious looking herbaceous plant, with a leaf larger than a cabbage leaf, is sometimes cultivated for the astringent properties of its roots. It is the large-leaved leea. The Burmans use it to stop the effusion of blood in wounds; but in Hindustan it is said to be a remedy for the Guinea-worm.

Leea macrophylla.

ကျာဘက်ကြီး၊ နိုဂွံမိလ်မိရ၊

TABASHEER.

Some of our bamboos secrete a silicious substance called tabasheer, which has a place among native medicinal substances.

ဝါထဲကကျောက်၊ ဘါဝါဝေ၊ ထံရး။

OFFICINAL POTHOS.

This creeper, as I judge, is not uncommon on the forest trees, but I have never seen the plant in flower. This also enters into the native Materia Medica, but it is not used in European practice, although it has a place in Lindley's Flora Medica.

Scindapsus officinalis.

Pothos “

ငရုကြီး၊ ခဲစာလျှံ၊ ကဆိထံမိဉ်၊

CYNOMORIUM.

Dr. Wallich says there is a species of this fungus-like genus, which is parasitical on the roots of trees in the Provinces, and valuable as a styptic; but I have not observed it.

Cynomorium.

SESAMUM.

The sesamum plant is largely cultivated by the Karens, who bring the seeds to market and sell them to the Burmese, and they express the oil. The seeds are said to have the same property as linseed, and the oil to be a good substitute for olive oil. The natives use it in curries, and also burn it for lights.

Sesamum indicum.

ခဲး၊ လို့၊ နံ့သိ၊

OLIVE.

Wallich found a species of olive tree on the banks of the Salwen, but from which no oil is made, that he called *Olea attenuata*.

KARUNG.

According to Wallich, the karung oil tree is indigenous in Amherst Province. The Burmese make an oil from a tree with which I have never met, that may be the tree referred to by Wallich.

Pongamia glabra.

သစ်ပင်ရုံ ?

COUNTRY MALLOW-LEAF.

The Burmese raise a species of abutilon, which is considered all over India a very good substitute for marshmallows.

Abutilon indicum.

သားမရုံ၊

SESBANIA.

A species of sesbania may be seen in culture for the sake of its leaves, which the Burmese use for poultices to promote suppuration. Owing to this characteristic they call the tree "water-chief."

Sesbania aegyptiaca.

ရေချက်၊

SUGAR-CANE.

That these Provinces are well adapted for the cultivation of sugar-cane, has been well tested by Mr. O'Riley, who made many tons of very excellent sugar from cane that was raised at Amherst. In Hindustan the mucilage of the musk-mallow, *Abelmoschus moschatus* is used to clarify sugar, and it is one of our most common indigenous plants. Both the Burmese and Karens grow sugar-cane, which they chew for its juice, and from which they make cake-sugar.

Saccharum officinarum.

ကျံ ခါဗဝဲ. ဝဲဝဲ

NIPA.

The nipa is very extensively cultivated in the province of Tavoy. From incisions in the stem of the fruit, toddy is extracted, which has very much the flavour of mead, and this extract when boiled down becomes sugar. In Burmah, where the palmyra abounds, an extract from that tree is made to supply its place.

Nipa fruticans.

ခို ခေဂံ. ကံး

COFFEE.

Coffee not inferior to the best from Mocha, I have raised in my own garden at Tavoy, but the plants do not flourish after the fourth or fifth year.

Coffea arabica.

MERGUI SAGO.

Sago may be seen in every bazar in the Provinces, but it is not generally known what plant produces it, many having the erroneous impression that it is made from manihot. It is the produce of an indigenous plant abounding along the sea shore, the islands, and especially at Mergui—a species of tacca, the same plant that is common in the South Sea Islands, whose tubers there supply to the inhabitants the place of bread. Considerable quantities of

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sago are made at Mergui, yet Lindley in his Medical Botany, makes no reference to tacca as yielding sago.

Tacca pinnatifida.

ပဲခူးတိုင်းတောက်တာ

သဘာဝ common sago.

မိုဟ်သီး large sago.

MERGUI ARROW ROOT.

A spurious kind of arrow root has long been made at Mergui from the same plant as that which yields the sago. But medical men have decided that it contains properties which render it unsuitable for the sick, and chemical analysis has developed that it contains only half the nutritious qualities of the genuine arrow root.

TRUE ARROW ROOT.

The true arrow root plant was introduced several years ago by Mr. O'Riley, and is beginning to be largely cultivated. The arrow root made is not inferior in quality to any imported; while it is sold for half the price, at a good profit. A gentleman at Tavoy has sold a considerable quantity for exportation this year, and has orders for more than a thousand pounds of the next crop.

Maranta arundinacea.

ပင်ပွား

ပင်ပွား

ပင်ပွား

TAPIOCA TREE.

I am not aware that either tapioca, or cassava is manufactured on this Coast, but manihot, the plant which produces both, is frequently seen in culture. The natives boil the root, and eat it like a yam, though severe sickness is often induced by the use of it. The Karen name signifies "tree yam," and in Burmese it is called the "Penang yam," which shows whence it was imported. Malays have told me that much of the sago, and arrow root which comes from Penang and Singapore, is made from this plant, though the former is usually supposed to be prepared from the sago palm; and Mr. Ranney informs me that arrow root is made from it at the Mauritius. It is said that an acre of ground, planted with the cassava tree,

yields nourishment to more persons than six acres cultivated with wheat.

Janipha Manihot.

Jatropha “

မလောဝိနိဗြာဟ္မံ ဂရိသျှိ. နွေသုဉ်း

EDIBLE MOSS.

This is a sea weed, abundant on the Coast, and exceedingly valuable for its nutritious and medicinal properties for invalids. It was first brought to public notice by Dr. O'Shaughnessy, as “The edible moss of the Eastern Archipelago,” who referred it to the genus *fucus*. The fructifications, however, being in small tubercles, I should consider it a species of Agardh's genus, *sphærococcus*; but that genus having been broken up, it now constitutes a member of the genus *plocaria*. It is an allied species with the Ceylon moss, *P. lichenoides*, with a species found on the coast of Devonshire in England, *P. compressa*; with the Corsican moss of the Mediterranean, *P. Helminthochorton*; and with a species used in China as a substitute for glue and gum-arabic, *P. tenax*; but differs generically from the Irish, or Carrageen moss, *Chondrus crispus*; and is not of the same natural family with the Iceland moss, *Cetraria islandica*, which is neither a moss nor a sea weed, but a lichen.

The Tenasserim moss is said to be superior to all others, as it is wholly free from the bitter principle, which renders other fuci so objectionable. It contains a considerable proportion of starch, and was hence named by Dr. O'Shaughnessy, the starch fucus, *F. amylaceus*; but his specific name has since been changed to *candida*, white, probably from a mistaken idea that the substance is naturally white, whereas it becomes so only by bleaching in the sun; its natural tint being a shade between olive and purple, such as the natives designate red.

According to Dr. O'Shaughnessy's analysis it contains as follows:

Vegetable jelly,	...	...	...	...	54.5
True starch,	...	...	...	...	15.0
Wax, a trace,	...	...	...	...	0.5 †

Ligneous fibre,	18.0
Gum,	4.0
Sulphate and muriate of soda, ...	6.5
Sulphate and phosphate of lime, ...	1.0
Iron, a trace,	0.4 ?
	<hr/>
	100.0

On the best mode of preparing it for use he adds :

" In the first place, from the tendency of *pectin* or vegetable jelly to form insoluble compounds with saline and earthy bases, it is necessary to steep this fucus for a few hours in *cold rain water* as the first step in its preparation. This removes a large portion, if not the entire, of the sulphate of soda, leaving all the gelatine, and starch. It should next be dried by the sun's rays, and *ground to a fine powder* ; I say *ground*, for cutting or pounding, however diligently or minutely performed, still leaves the amylaceous globules so mechanically protected, and so closely involved in an external sheath of tough ligneous fibre, that scarcely a particle of the starch can be extracted by boiling, even though the decoction is prolonged for several hours. When *ground*, boiling for 25 minutes or half an hour dissolves all the starch and gelatine. The solution while hot should be passed through muslin or calico, and thus the ligneous fibre is removed ; lastly, the strained fluid should be boiled down till a drop placed on a cold surface gelatinizes sufficiently.

" With milk and sugar, and flavoured with lemon juice or sherry, this substance, when prepared as I direct, would afford the invalid a pleasant article of diet, especially at sea, where other jellies or their materials cannot be so easily preserved. As I am informed that this fucus is found abundantly on the eastern coast of Bengal, I entertain considerable hopes of its being hereafter found available also in several processes of art and in various manufactures."

Plocaria candida.

Fucus amylaceus.

ကျောက်ပွင့်

PLANTS PERTAINING TO ECONOMICS.

There are numerous plants used for dyes, for tanning, for clothing, for cordage, for building, and for other economic purposes, which admit of being grouped together.

VARIOUS BLACK-DYE PLANTS.

The blossoms of the shoe-flower plant are used by the Chinese to dye leather black, the juice of the cashew-tree gives a black to linen, and the fruit of the melastoma affords a black dye.

SHAN BLACK DYE.

This celebrated vegetable dye is made from the fruit of a species of ebony, which is said to grow on the mountains that separate the Province of Tavoy from the Siamese territories. Isolated plants may be seen in the gardens of Tavoy, and Maulmain, but I have never seen one in flower, or fruit.

Diospyros mollis.

မင်းကျီး—*ma-kleu.* (Sgau.)

CHEBULA.

The fruit of the chebula mixed with an iron clay is in common use to form a black dye, which is said to be very good. All the native ink is made from this fruit, but although black when used, in the course of a dozen years it sometimes fades so that the writing is scarcely legible. The tree is found throughout the Provinces, but is not very abundant.

Terminalia Chebula.

ကျွဲခွံ ဗရံ (*Tavoy.*) သို့မဟုတ် သုရုမိန်

PHYSIC-NUT.

The physic-nut tree is often seen in cultivation, and its juice dyes linen black. Lindley says : "The oil boiled with oxide of iron forms a varnish used by the Chinese for covering boxes." The Hindus use the oil to burn in lamps.

Jatropha Curcas.

သင်္ဘောကြက်ဆွဲ

MARKING NUT.

This fruit produces an indelible ink which is used for marking, and for other purposes. The dried nuts are constantly for sale, but I have never met with the tree growing.

Semecarpus Anacardium.

ချေးချေးပန်း

OAK GALLS.

Oak galls can always be obtained of the native druggists, but I think they are all imported, although we have several species of oak indigenous in the Provinces.

Quercus.

ပြည်တကာနီသီး

RUELLIA.

The Burmese cultivate a low plant as a substitute for indigo which is the *room* of Assam, from which country it has probably been introduced. It forms a blue dye not inferior to that produced by the true indigo plant.

Ruellia indigofera.

ဝဲကြီး၊ ဗာလမိုး၊ ဗာလသို့ဖဝံ၊ သညာသုန်မိ၊

ASCLEPIAS BLUE DYE.

The Karens, and sometimes the Burmese, plant a creeper that is indigenous in some sections, and which makes quite a good indigo blue, though not equal to the ruellia dye.

Marsdenia tinctoria.

Asclepias "

ဝဲနွယ်၊ ဝဲမိ၊ ဗာလသို့ဖဝံ၊ သညာသုန်မိ

INDIGO.

The true indigo plant is grown occasionally by both Karens and Burmese, but less extensively than either of the preceding.

Indigofera tinctoria.

ဝဲနယ်၊ ခုန်းဝဲ၊ မာ်ဝံ၊ နီ၊ မိ၊ ဝါ၊

WILD INDIGO.

An indigenous shrub, a species of indigo, is sometimes used in forming a blue dye.

Indigofera.

မုရ်ငါး မရိမာ်. မုရ်ငါးမာ်.

JAMBO MORDANT.

The bark of a species of eugenia is used as a mordant for blue and black dyes.

Eugenia Jambolana?

သင်္ကြံသွင်. မာ်. သမ္ပာပါရခါ.

VARIOUS RED-DYE PLANTS.

The rose-coloured fruit of the tamarind “ yields a beautiful deep red-colour, approaching purple”; the wood of the *Adenantha pavonia* dyes red, and the wood of the black varnish tree affords a red dye.

SAPPAN WOOD.

In the valley of the Tenasserim, between the latitudes of Tavoy city and the mouth of Tavoy river, the hills that border the valley on the eastern side abound in sappan wood, which is used extensively as a red dye. Considerable quantities are exported every year from Mergui, and that province is usually supposed to contain the tree, though it is really within the province of Tavoy; but the facility of water communication from the interior to Mergui, makes that the only port to which the wood is conveyed. It is rather singular that this narrow locality is the only one in the Provinces, so far as I am aware, in which the tree is found. The tree has a much wider range, the Karens inform me, on the Meinam side of the mountains in Siam. More than five hundred thousand pounds have been exported from Mergui during some years between 1830 and 1840; but latterly the forests have not been so productive.

Cæsalpinia Sappan.

တိန်ညက်.

LOG-WOOD.

The log-wood tree is cultivated in a few gardens, and appears to flourish as well as an indigenous plant.

Hæmatoxylon campechianum.

ARNOTTO.

The arnotto tree, though an American plant, is propagated extensively by the Burmese, who prepare a red dye from its fruit.

Bixa Orellana.

ထိတင်း၊ ဝန်၊ (Tavoy.) မာလာ၊ မ်ပမိ၊

MORINDA.

The Karens prepare their red dyes most usually from the roots of the morinda tree, of which at least two or three species are used for this purpose. One, *M. citrifolia*, is also cultivated by the Burmese for a dye, but the Karens more commonly use the indigenous species.

Morinda citrifolia.

ညောကြီး၊ ပဝံသျှဗဝံ၊ ဃီးသုမီး၊

Morinda exserta.

ညော၊ ပဝံသျှ-ဇေ၊ ဃီးသုဉ်၊

Morinda.

ညော၊ ပဝံဗဝံ၊ ဃီးမိ၊

INDIAN MADDER.

Indian madder, though not seen in the Provinces, is found in Burmah.

Rubia cordifolia.

MANGROVE MORDANT.

The bark of a small tree from the mangrove swamps is used by the Tavoy women in dying red, but I think as a mordant.

Kandelia Rhcedii?

ကသိုင်း၊ ကျသိုင်း၊ ကပာ၊

VARIOUS YELLOW-DYE PLANTS.

The wood of the jack, the root of the psychotria, the bark of the gamboge trees, the flowers of the buteas, the rind of the Bengal quince, and the leaves of the memecylon and the touk-yat, all produce bright yellow dyes.

SAFFLOWER.

The safflower is widely grown on the banks of the Irrawaddy, and may be occasionally seen on the banks of the Salween. Its flowers furnish the best yellow dye in the country, and mixed with other ingredients they are used to dye red, and to give a variety of tints.

Carthamus tinctorius.

သူး

TURMERIC.

Besides using turmeric for both food and medicine, the Burmese and Karens dye with it a bright yellow, but it is not very permanent.

Curcuma longa.

သန့်ငါး

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VARIOUS ORANGE-DYE PLANTS.

The flowers of the buteas with an alkali, the corolla tubes of the tree of mourning, and the leaves of the henna tree, yield beautiful orange dyes. The latter are used in India to dye skins a "reddish-yellow."

MERGUI RED-WOOD.

Mergui red-wood is a valuable dye wood for both black and red, but more especially for orange. From an article in the Journal of the Asiatic Society, it appears that "a number of experiments, made at the request of Mr. G. Swinton, by Mr. Thomas Speir, upon the Mergui dye wood, prove that it affords, with the mordants commonly used by dyers, colours equally bright, and of a more permanent nature than those of most other dye woods. The colours imparted to silk with different mordants were as follows :

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1.—*Muriate of tin*: Three shades of orange, varying with the temperature of the bath, and the time of immersion.

2.—*Acetate of alumina*. Two shades of flame colour.

3.—*Acetate of iron*. Two shades of drab.

4.—*Ditto, with a weak decoction of galls*. A fine black, two shades.

5.—Mixed with *manjit*, a variety of red and pinks are obtained, but not perhaps equal in intensity to those of the *manjit* alone. The chief attraction of this wood as a dye, is the orange colour which it yields with the aid of muriate of tin and acetate of alumina, of a great variety of shades.

These results shew that the Mergui wood is deserving of further attention, and that it may become eventually an important article of commerce with our possessions on the Tenasserim Coast."

It is not quite certain what tree produces the Mergui red-wood. The flowers which accompanied the specimens of the wood sent to Calcutta, belonged to the Burman black varnish tree, yet Mr. Maingay who sent them, thought it a different tree. I imagine there was some mistake, and that the Mergui red-wood is identical with the Tavoy red-wood.

Syndesmis Tavoyana.

GREEN-DYE PLANTS.

Turmeric, and the leaves of the soap-acacia afford a beautiful green dye.

Acacia rugata.

ကဗွင်၊ ဗာဂျီ၊ မိဆံ၊

BLACK VARNISH TREE.

The celebrated Burmese black varnish tree, which is used to lacquer boxes, is cultivated in the Provinces, but I never saw it growing spontaneously.

Melanorrhæa usitatissima.

သစ်ဆေး၊ မု၊ သု၊

WILD BLACK VARNISH TREE.

There are two indigenous species of the same genus that produces the common black varnish; but I am not aware that the exudation which they yield is applied to any economical purpose.

Melanorrhæa glabra.

" *visitata.*

သစ်စေ့ခိုင်း၊ သူးခိုင်း

HOLIGARNA.

There is another black varnish tree in the forests, belonging to a different genus; and on the other Coast, where the tree grows, its exudation is used by the natives to varnish shields, and for other purposes.

Holigarna longifolia.

ရှစ်ချေး၊ ? သွန်ပိန်ပူ

YELLOW VARNISH TREE.

A species of garcinia that has often been mistaken for the tree which produces gamboge, is very abundant throughout the Provinces, and the gum-resin which it yields when dissolved in spirits of turpentine, affords a beautiful permanent yellow varnish for metallic surfaces.

Garcinia Cambogia.

တောင်တလဲ၊ ပကျယ်ရှင် (Tavoy.)

ခွါဗာ၊ ခမ္ဘ.—ခွါ တီးတလဲ

PINEY VARNISH TREE.

Trees which yield this beautiful varnish so extensively used in Hindustan, are very common about Maulmain, yet I am not aware that the varnish is collected.

Vateria Roxburghiana.

သက်တောက်၊

TANNIN TREES.

The Provinces are rich in materials for tanning. The bark of the *Careya*, and of half a dozen different species

of mangrove, the fruit of the sea-cocoanut, and the peel of a species of ebony, all abound in tannic acid.

Rhizophora conjugata.

မြို့ သုဉ်းထီး

Rhizophora gymnorrhiza.

Bruguiera Rheedii.

" *eriopetala.*

" *parviflora.*

မြို့ ?

Carallia lucida.

စေါင်း

Kandelia Rheedii.

ကဘိုင်း ကျဘိုင်း ကပေါင်း ?

COCOANUT.

The Burmese express large quantities of cocoanut oil, but use it principally to burn.

Cocos nucifera.

သုဉ်း ကျော့ စီး

CERBERA.

In many places on the banks of tide-water streams, the most remarkable tree in sight is a species of cerbera, whose fruit is used very extensively by the Burmese to make an oil which they burn in their lamps, and use to anoint their heads; a use not mentioned in the books. Lindley describes it as emetic and poisonous, of which there can be no doubt. "The milky sap," he continues, "is employed as a purgative. The leaves and bark are so similar to senna in their action that they are substituted for it in Java." These are properties which are unknown here, and their existence may be doubted. If the statement be correct, these Provinces might supply all India with senna; for the tree abounds from the mangrove swamps on the sea-shore, to the boundaries of tide-water on almost every stream, and any quantity of leaves may be obtained for the trouble of gathering.

Cerbera Manghas.

ကထွာ သို့သို့ သုဉ်းသီး

WOOD OIL TREE.

Dr. Helfer says that the oil of wood "laid upon paintings covers them with a transparent fine coating, not liable to turn yellow, and dries quickly."

A few years ago Mr. Laidlay, the Secretary of the Asiatic Society, discovered that the oil of wood will dissolve caoutchouc. "The process adopted was simply to cut the caoutchouc into small pieces, and then drop a sufficiency into a bottle of the oil. In the course of a few hours the caoutchouc swells, and must then be frequently stirred to facilitate the process. If heat be applied, complete solution is speedily effected, but several days are required at the ordinary temperature of the atmosphere. The solution thus prepared may be spread on cloth, which is thereby rendered water-proof." Wood oil has been found to answer as a good substitute for fish oil in currying leather; and it is used for house varnish.

Large quantities of this oil are used in these Provinces in the manufacture of torches, which emit a brilliant and durable light. A half dozen of these torches planted on an eminence make a splendid cresset, illuminating far over the plains.

Dipterocarpus laevis
" *turbinatus.*

ကညဉ်း ဝါ့ ဘုံ့. မီးသီး

OIL OF BEN TREE.

The tree which yields the celebrated oil of ben is very abundant, though I am not aware that any oil is pressed from the seeds in these Provinces. But in the West Indies the oil of this tree is used for salad oil, and "because it does not congeal or turn rancid, employed by watchmakers, and for retaining the aroma of delicate flowers."

Moringa pterygosperma.
Hyperanthera Moringa.

ဒသလုံ့ ဘုံ့ ဘုံ့. ပထီးသွဉ်း

ILLIEPIE OIL TREE.

In the southern part of the Provinces a large timber tree is indigenous, from the seeds of which the natives express an oil which they eat with their food, and use for other purposes. It is a species of bassia, and does not

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differ sufficiently from the tree which produces the illepie oil of Hindustan to constitute a new species.

Bassia longifolia.

ကပ်စေဉ်

ကျွတ်ဉ်

ကိန်စိန်

CAOUTCHOUC.

Within a dozen years the true caoutchouc tree of Assam has been introduced into the Provinces, and appears to grow as well as an indigenous plant.

Ficus elastica.

TENASSERIM CAOUTCHOUC.

An indigenous creeper yields caoutchouc not at all inferior to that which is obtained from the elastic fig tree. The Agricultural and Horticultural Society, in reporting on a specimen sent them by Major Macfarquhar of Tavoy, observed : "With care in preparing, it would be equal to the best South American." I have never seen the plant in flower, but to judge from the fruit, it belongs to the dogbane tribe, and echites group, for its seeds are comose above.

Echites.

ကျက်ပေါင်း

ရှင်စောဉ် (Tavvy.)

ပျံ့

သဇံး

DAMMER.

Dammer in India supplies the place of pitch and rosin, and in these Provinces is the product of three different genera belonging to the wood oil tree family—the shorea, the hopea, and the dipterocarpus.

SOAP-NUT.

The soap-nut tree has been introduced, and appears to flourish.

Sapindus emarginatus.

SOAP ACACIA.

The dry pods of a species of acacia are sold in the bazars, which are used as a substitute for soap in cleansing the hair.

Acacia rugata.

ကင်ပွင်း

ဖျော့ဖျော့

မိဆံဉ်

FLAX.

The flax-plant is not, so far as I know, cultivated either in these Provinces or Burmah, but the Burmese are acquainted with linen from their books in which it is frequently mentioned.

The lake or tank near king Wathandria's hermitage, is described as being covered with water lilies, that appear like garments made of thread of flax bark ; and linen garments are mentioned among those which priests are permitted to wear.

Linum usitatissimum.

ခေါင်း *Kshauma* (Sanskrit.) ခရားလှ. ခိမ.

NATIVE COTTON.

The Karens usually grow cotton enough to make their own fabrics, and on the Salwen and Tenasserim it is sometimes raised in considerable quantities ; but its market price is little more than a fourth of the best American cotton ; yet with improved modes of culture, and frequent changes of seed, its value would undoubtedly be greatly increased.

Gossypium herbaceum.

ငါး *hိာ*. ခဲ.

PERNAMBUCO COTTON.

Mr. Blundell introduced the plant which produces the Pernambuco, Peruvian, Bahia, or South Sea Island cotton ; and Capt. Macfarquhar raised such a fine article at Tavoy from it, that the Committee of the Agricultural and Horticultural Society of Calcutta were unwilling to believe it the production of that species. They reported : " The sample sent by Capt. Macfarquhar appears to be of a quality resembling the *Sea Island*, but finer and more silky, and the fibre not so strong, its value is not so easy to determine, but the Committee are of opinion that it would sell for a high price. The Pernambuco cotton, which it is believed, is the same as the *South Sea Island* cotton, is an inferior staple to that of the N. American *Sea Island*, and they have a sample of cotton submitted,

which in point of *fineness* surpasses the genuine Sea Island cotton of N. America.

"This improvement on the general staple of Pernambuco cotton might be reconciled had it been produced *at a distance from the sea*, since it has been ascertained, that this description of cotton deteriorates by proximity to the sea; whence your Committee are disposed to think that Captain Macfarquhar has been led into error in calling it *South sea Island* instead of Sea Island."

Admitting that Captain Macfarquhar was in error, which it is believed he was not, the report proves that an article "finer and more silky," than the best American cotton has been raised in these Provinces. The principal difficulty to the introduction of this species into general cultivation was, as Mr. Blundell told me, that the trees did not produce abundantly.

Gossypium acuminatum.

ငါးလေး၊ ဝါးလေး၊ ဝါးလေး၊

SEA ISLAND COTTON.

Sea Island cotton has been raised in these Provinces by amateur cultivators, but I have never seen any report on the article obtained. "Bourbon cotton of Indian growth," says Wight, "has sold in the London markets for the highest prices going;" and, as the Bourbon plant is the original Sea Island acclimatized to the East, the cultivator would have a stronger probability of success by obtaining his seed from Bourbon, than from America. Much attention should also be given to the selection of a proper soil. Analysis has shown that all the lands on which cotton is grown in India, differ widely in their constituent parts from the best cotton lands of America. The subject is still in its infancy, more extensive analysis being required; "but it seems *at present*," observes Mr. Piddington, "that the abundance and fineness of good cottons depend on the quantity of carbon in the soil, *and the solubility of that carbon*. If therefore, you can obtain a soil approaching the American soils, that is, containing peaty matter, lignite, and colouring cold water, this will no doubt be the best; because it contains

carbon, and probably hydrogen combined with it, suitable for the food of the plant. And the next best soil is one containing carbonate of lime."

Gossypium barbadense.

Var. (a) Barbadoes, or Bourbon cotton.

" (b) Sea Island, or long stapled "

" (c) Upland Georgia, or short stapled "

HEMP.

Near the Burmese villages large fields of a yellow-flowered plant, as tall as wheat, may be often seen, which is called hemp. In Hindustan it is called Bengal flax. Although the stems of the plant produce a substance analagous to flax or hemp, it bears no relation to those plants, but is a species of *crotalaria*, a leguminous plant. The true hemp though occasionally grown to a small extent, is never fabricated into cloth.

Crotalaria juncea.

ပဲး ဖိုက်ဆံ၊ ဝဒီး။

NETTLE HEMP.

In the neighborhood of Ava a substitute for hemp is diffused, belonging to the genus *urtica*, which was cultivated for several years by Major Macfarquhar at Tavoy, who endeavoured to induce the natives to foster it, but it has not yet been brought into general culture. Colonel Burney said that the Burmese at Ava called it *goun*.

Urtica tenacissima.

ဂွံ၊

SIDA HEMP.

The most troublesome weed in Tavoy produces a very fine hemp or flax. There are two species, but they are not usually distinguished.

Sida acuta.

ဖျင်စန်လင်း သင်္ဃာလိ။

Sida stipulata.

ဖျင်စန်လင်းအမ သင်္ဃာလိ။

URENA HEMP.

Another weed which abounds all over the Coast serves

in the place of hemp in Amherst Province, and appears to afford a valuable article.

Urena lobata.

ကပ်ဝေးနဲ။ ဝက်ချောနဲ။ ရွတ်ထိုင်း။ ဘီတာဝါ။

CORDAGE PLANTS.

As in other parts of India, cordage is made of coir, the outside shell of the cocoanut, but ropes are more frequently made from the bark of three different trees belonging to the genera *hibiscus*, *paritium*, and *sterculia*.

Paritium macrophyllum.

Hibiscus macrophyllus.

ဘက်ပွရွှေ။ ဘျာဘဝံ။ ဆိပ်ထိန်။

Paritium tiliaceum.

လှည်းညာရွှေ။ သင်ပန်။ ဘျာဘိာ်။ ဆိပ်ထိန်။

Sterculia guttata ?

" *ornata ?*

ရွှေနီ။ ဆိပ်ဖိ။

RED COTTON TREE.

The red cotton tree is one of our most abundant forest trees, and the silky down that envelopes the seed is used to stuff mattresses and pillows ; and it has occasionally been made into cloth. There appear to be two species, but I can refer to the description of one only.

Salmalia malabarica.

Bombax malabaricum.

Salmalia insignis.

လက်ပံ။ ဓိာ်။ တိး။

လဲ။ ဗိ။

WHITE COTTON TREE.

The white cotton tree does not grow spontaneously, but is often planted, and the floss, which it yields abundantly, is preferred to the product of the red cotton tree.

Gossampinus Rumphii.

Eriodendron anfractuosum.

သဘိဘလဲ။ ရှင်။ (Tavoy) နဲ။

PAPYRUS.

Many of the mats sold in bazar are imported from Calcutta, where they are made of a species of papyrus that grows in Bengal.

Papyrus Pangorei.

Cyperus tegetum.

ဝက်လာ။

ပရိယ။

ဆွဲ။

MARANTA.

Some of our mats are made from the split stems of a species of maranta, but they are all imported from Rangoon, although the plant from which they are made, or an allied species, is abundant in our own forests.

Maranta dichotoma.

Thalia cannaeformis.

သင်။ သင်ထိမ်။ (Tavoy.) ကရုဏာ။ ခိုးထိမ်။

LOWLAND SCREW-PINE.

The large coarse mats in universal use are made from the leaf of a species of screw-pine, that grows abundantly on the lowlands near tide-waters.

Pandanus furcatus ?

သင်ဘု။

ဇာလိယ။

ခိုးထိမ်။

HIGHLAND SCREW-PINE.

Smaller and finer mats in common use are fabricated from the leaves of another species of screw-pine, that grows on the highlands above tide-waters.

Pandanus.

SAIL-LEAF.

On many of the Burmese boats, sails are seen made of large narrow leaves, sewed together. They are the leaves of a species of screw-pine that has a trunk like a palm, which is very abundant and usually grows near the sea. The fruit is used by the Karens to hackle their thread.

Pandanus.

ဆင်သွား။

ခါးခွံ။

ခိုးခွံ။

PAPER PLANT.

The Burmese make a coarse paper from the bark of a large creeper that is found in the forests. The paper is as thick as paste board, and the surface is blackened and written upon with a steatite pencil. I have never seen the plant in flower, but it is probably a species of daphne.

Daphne.

ဆလေ။

၁မာ်၅၄။

သမံကျိ။

PALM-LEAF.

All the Burman books are made of the leaf of a species of corypha, but the orders that are issued from the Burmese courts are written on strips of palmyra palm-leaf.

ABRUS.

The jewellers use the seed of a species of abrus, red, with a black eye, or black with a white eye, for small weights. It is a popular belief that they almost "uniformly weigh exactly one grain, troy;" but I have weighed many and found them to vary from one to two grains. The Burmese use them within a fraction for two grain weights. One hundred and twenty, by one mode of reckoning, and one hundred and twenty eight by another, make one tickal, which weighs according to Capt. Low 253.75 grains troy.

Abrus precatorius.

ရွေးငယ်ချင်ရွေး။

မောင်မငယ်။ (Tavoy)

၁၅၀၈။

သလှ်ဂိ။

ADENANTHERA.

Another seed which the books represent as usually weighing four grains, is in common use by the Burmese, as equivalent to two of the preceding, which is about four grains. The seeds, however, have to be selected for the purpose; many of them not weighing more than two, or three grains each.

Adenanthera pavonina.

ရွေးကြီး။

မောင်မကြီး။ (Tavoy)

၁၅၀၈၁၅၀၀၂။

သလှ်ဂိးဒ်ဒ်။

BEAD PLANTS.

The Karens in the southern provinces cultivate one or two species of Job's tears for the seed. The Pwos plant a species with round seeds which are used to ornament the borders of their tunics, but they are never seen on a woman's gown. The Sgaus on the contrary, cultivate a species bearing an oval seed, and use them merely for embroidering female dresses. In Amherst Province, the Pwos seldom appear in their native costume, and many deny that their tribe ever had any other than that which they now wear, which is Burmese.

Coix.

ကလိ။ ဝို။ တာနိ။

THATCH LEAF.

In some sections of the country the Karens thatch their houses with large palmated leaves of a tall wild palm, probably a species of *livistona*; sometimes the leaves of a species of *ratan* are used; but the Burmese and Europeans almost universally thatch their houses with the leaves of the *nipa*.

THATCH GRASS.

The Karens in Amherst Province cover their houses with the tall grasses which are so abundant on the Coast, and a few Europeans prefer this thatch to that made from the *nipa*. Two different species of grass are used for this purpose, both of which were formerly referred to the genus which produces sugar cane.

The sugar grass seen in Maulmain, which flowers two or three feet high, has been removed since Roxburgh wrote, into the genus *imperata*. This is one of the grasses used for thatch, and is often mistaken for *Saccharum spontaneum*, which is the other.

Imperata cylindrica.

Saccharum cylindricum.

သက်ကယ်ညွင်း။ ဗာမာဗုံ။ ကဟံဒိ။

Saccharum spontaneum.

သက်ကယ်ကြိုး။ ဗာမာဂုံ။ ကဟံဒို။

CANE.

Cane or ratan is used extensively by the natives instead of cordage. The stays of the masts in native boats are usually made of ratans, and they are split up into strings for innumerable purposes to which cord and twine are usually applied. All that gives stability to bamboo houses, is the ratan which ties them together. There are numerous species indigenous in the forest, and the Karens have different names for seventeen species or varieties.

Calamus.

ကျိန် ဝါ. ဇုံ

BAMBOO.

The bamboo is used for all purposes to which timber is usually applied. Most of the native houses in the Provinces are built principally of bamboos tied together with ratans. Cots, seats, and tables are often formed of the same material. The Karens have names for seventeen species or varieties, one of the strongest of which is covered with large thorns, and makes an impenetrable fence ; but the China bamboo, which has been introduced from Penang, makes the closest and prettiest hedge, and when cut annually, looks like an English quick-set hedge. The gigantic bamboo, the largest bamboo in the world, is indigenous, but in the southern provinces is seen only in cultivation.

Bambusa spinosa, (thorny bamboo.)

ဝါးချပ် ချပ် ဝါဒေ့. ဝန်ဆွန်

Bambusa gigantea, (gigantic bamboo.)

ဝါမိုး ဝါချော့. ဝန်ချပ် ဝန်ကျပ်

Bambusa nana. (Penang, or China bamboo.)

မိလောဝီနီဝါ ဝါဂေ့. ဝန်ကဒါ

TIMBER TREES.

The yellow wood of the jack affords beautiful timber for furniture, and in some parts of India it is highly valued. The heart of old tamarind trees furnishes a hard, dark-coloured wood, resembling ebony. Roxburgh says the wood is "durable and beautifully veined." *Cassia florida* has wood "not inferior to ebony." *Pongamia glabra*, and *Wrightia coccinea* have light fine wood. The Ceylonese iron wood tree, *Adenanthera pavonina*, *Vachellia Farnesiana*, *Acacia Catechu*, and the jujube tree furnish hard, tough wood. *Cassia fistula*, *Cassia nodosa*, the chestnut tree, *Sandoricum indicum*, *Nauclea Cadamba*, and one or two species of eugenia afford good timber.

These are among more than a hundred trees in the Provinces that furnish valuable woods, of which the following selection of fifty or sixty embraces the most useful.

TEAK.

Teak is the staple timber of the Tenasserim Provinces, and from its abundance in Province Amherst, and its valuable property of being impervious to the white ants, it is used in Mawlaikine almost exclusively both for building purposes, and for furniture. In 1848 eighteen thousand tons of this timber were exported, and Mr. O'Riley estimated that more than three thousand tons were used for home consumption; the total value of the whole falling little short of a million of rupees.

Tectona grandis.

ကျွန်း ဝဗျံ. ဝဗ်ဉ်း

HAMILTON TEAK.

This is an inferior species of teak that grows on the banks of the Irrawaddy; and from native descriptions, I imagine it is found in the province of Yay.

Tectona Hamiltonia.

" *ternifolia.*

တယဟတ်၊ တဟတ်၊

BASSIA.

In the southern Provinces, the bassia tree is quite abundant in a few localities; and it is said to afford a timber in no way inferior to teak.

Bassia longifolia.

ကမ်းဝင်း၊ မျှဝေ၊ ကိန်ဒိုင်း၊

IRON WOOD TREE.

This is a species of the old genus acacia, and the timber is usually denominated iron wood in Arracan, and is sometimes so called in these Provinces. The hard wood is as impervious to white ants as teak, and is even more durable in the ground. Natives have assured me that they have seen house posts of this wood taken up after having stood forty years, and that the part which had been buried was as sound as new timber. The trees abound in the province of Tavoy, especially near the forks of the Tenasserim.

Inga xylocarva.

Acacia “

ပျင်းကတိုး၊ ပွဲ၊ ခွံ၊

FAGRÆA.

The fagræa yields a very hard and excellent timber, which Mr. O'Riley says the teredo will not attack. The Burmese regard it as too good for the laity, and say it ought to be confined to sacerdotal purposes. At Tavoy it is used principally for the posts of Buddhist edifices.

Fagræa fragrans.

အနံ့၊ ဝေဂ္ဂ၊ ဆူးကနဲ၊

EBONY.

The Karens have distinctive names for four different species of ebony trees. The salt water swamp ebony, the water ebony, the yellow ebony, and the true ebony. I have never met with the trees in flower, so as to be able to distinguish the species; but I have seen specimens of

the wood in the southern provinces, not inferior to the ebony of commerce.

Diospyros.

တည့်၊ တယ်၊ နတ်၊ (Tavoy.) ၂၆၁၊ သီသမူ၊

MAULMAIN EBONY.

There is an inferior kind of ebony often seen at Maulmain, which the natives do not call by the same name that they do the trees which produce the good ebony, though evidently a product of the same genus. A similar wood at Tavoy is often denominated iron wood.

Diospyrus.

ရင်းတိုက်၊ ဘျံ့ဟံ၊ သွင်္ဂါ၊

MOUNTAIN EBONY.

Loudon calls baughinia, mountain ebony, and the wood, though not much like ebony, is quite hard, and might be applied to many useful purposes. To the five species which are enumerated among the flowering plants, may be added a small timber tree bearing a sour leaf, and a pod containing sweet pulp, like the honey locust of America. I have not seen the flower, but the twin leaf is that of a baughinia.

Baughinia.

ရွှံ့ဖုတ်၊ ဇာဟျံ့ဒျံ့၊ တပုဆိန်၊

MAHOGANY.

The genuine mahogany tree may be seen in some of our gardens, where it appears to flourish.

Swietenia Mahagoni.

TENASSERIM MAHOGANY.

The gum kino tree, pterocarpus, or padouk, produces a timber which in its finest specimens bears so strong a resemblance to mahogany that a visitor mistook it for mahogany, and recorded it as such in the book of his travels. At Maulmain, it is called red-wood, and one of the trees, for there are two species, differs very slightly from the tree which yields the Andaman red-wood, of which Rox-

s*

burgh wrote: "Wood not unlike mahogany, but more heavy, red, and coarse in the grain. That of the root beautifully variegated, closer grained, and darker coloured."

Pterocarpus Wallichii.

" - *dalbergioides.*

ပတောက်၊

ချဲ့ချဲ့၊

ကျိကျိ။

TAVOY RED-WOOD.

Tavoy red-wood makes handsome furniture, and is used in Tavoy for the same purposes to which gum kino wood is applied at Maulmain. When the wood is steeped in ferruginous mud, it turns jet black, and looks like ebony. The large cylinder knobs, one or two inches in diameter, so often noticed in the ears of Karen women at Tavoy, are made of this wood after the colour has been changed.

Syndesmis Tavoyana.

ချေး၊

မုတု၊

သုဗု၊

SHOREA ROBUSTA.

This tree I have never seen, but the Burman books say that Gaudama died in a grove of engyen trees; and the Pali name of engyen is *thala*, the Sanscrit *sal*, the name of the *Shorea robusta*. It not improbably exists in the Provinces, but the trees of the dipterocarpus tribe are so large that, to use the language of Griffith, "the flowers are frequently inaccessible." On one of the islands near Mergui I found an enormous tree, whose dry fruit, with the calyx enlarged into five long wings, proved that it was at least a species of shorea, and on the Karen mountains I have gathered a similar fruit. The natives say that a part of the petrified wood found in the valley of the Irrawaddy belongs to this tree, and the Burman books that Gaudama was born under one of them; although the savans state that he was born under a Jonesia.

Shorea robusta "is probably the best timber tree in India," according to Captain Munro; and every species

of the natural family that produces it, affords valuable timber.

Vatica robusta.

Shorea “

အင်ဒြီး၊ (ဗီဗဲဒ်၊ *A species of shorea.*)

LARD SHOREA.

On the mountains in the interior is a species of shorea which produces an oil of the consistence of lard, and has been hence named by the Karens “the hog's lard tree.” The books say that the shoreas produce resin, and dipterocarpus oil, but the fine long scarious wings of the dried calyx afford incontrovertible evidence that it is a species of shorea.

Vatica, vel Shorea.

ကညညို၊ ဝုဗ်သိ၊ ဗီဗဲဒ်၊

DOUBTFUL SHOREA.

The largest tree in the Provinces of the wood oil tree family, yields no oil, and is probably a species of shorea; but I have never seen it either in flower or fruit. It is principally used for making large boats, but its places of growth are usually of difficult access by water, and it is not in very general use. Mr. O'Riley says: “It is well adapted for spars for vessels.”

Shorea?

ကောင်း၊ ဝုဗ်၊ ဗီဗဲ၊

HOPEA.*

The hopea is considered the most valuable indigenous timber tree in the southern provinces; and at Tavoy and Mergui it is sawn up for building purposes. The best canoes are made of hopea, and it is used extensively in native boat building.

Hopea odorata.

အင်ကန်၊ ဝုဗ်၊ ဆူးကွဲ၊ မီးကွန်၊

* In America often erroneously spelled hopia.

VATERIA.

A species of *vateria* is a common timber tree in the Provinces of Tavoy and Mergui. The timber is whiter than *hopea*, and equally good. Indeed, it is often called white thengan, or white *hopea*, the woods being only distinguished in commerce by their colour. Wallich in his list of Indian woods mentions *Hopea floribunda* as known at Tavoy by the Burmese name of *tantheya*. This tree is called at Tavoy *pantheya*, but it is certainly not a species of *hopea*. Its flowers, in white fragrant panicles, are often seen in the Tavoy bazar, and are very unlike the yellow secund flowers of the *hopea*.

Vateria lanceolata?

ပန်သင်ယာ၊ ပျာသာ၊ ပန်သုထန်၊ သုထန်ခိ၊

WOOD OIL TREE.

The common wood oil tree produces a very useful timber, which is sawn into boards at Tavoy and Mergui, and used in house building. Where not exposed to the wet, they answer as well as teak, and are sold at half the price; but they are not impervious to white ants.

Dipterocarpus laevis.

သညည်ခိ၊ ဝုသံ၊ စိသိ၊

LARGE-FLOWERED DIPTEROCARPUS.

This is a species of wood oil tree which grows on the sandy plains near the sea-shore, and on a similar soil in the interior.

Dipterocarpus grandiflora.

အင်း၊ ဝုဂေါဒု၊ စိသိကြာ၊

SOUR WOOD OIL TREE.

This is the name which the Karens give a large tree that grows on their mountains, but which produces comparatively very little wood oil.

Dipterocarpus.

စိသိန် (Sgau.) ဝုဒေါ၊

BITTER WOOD.

The bitter wood a small tree used for boats in the neighborhood of Amherst, is particularly desirable for being, as Mr. O'Riley states, "exempt from the attack of the teredo." I have never seen the tree, but its leaves and fruit were furnished me by Mr. O'Riley, and they indicate it to be a species of terminalia, and of the section pentaptera. The good timber, and bitter bark assimilate it to Roxburgh's *P. Arjuna*, but the foliation is different.

Terminalia (Pentaptera.)

သစ်ခါး၊ ကသစ်ခါး၊ ရှစ်ခါး၊ (Tavoy)

သို့သဖျံ၊ တက်သီး၊

TERMINALIA.

I believe every member of the genus terminalia yields useful timber, and besides the preceding species, two others, the chebula, and bellerica have been noticed as indigenous in another part of this work. A still larger timber tree is common in the interior, whose winged fruit indicate its connection with Roxburgh's genus pentaptera.

Terminalia (Pentaptera.)

စမီးဇို၊ (Sgau.)

CHASTE TREE.

This is a species of vitex very common at Maulmain, which produces a valuable small timber. Roxburgh says: "Wood when old, chocolate coloured, very hard, and durable."

Vitex arborea.

ထောက်ရှား

GMELINA ARBOREA.

Wallich met with this tree on the Salwen, but it has never fallen under my observation, and I am unacquainted with its native name. It produces, however, a useful timber, "not readily attacked by insects."

Gmelina arborca.

TOON WOOD.

Lieut. Nuthall, as quoted by Captain Munro, mentions toon as one of the woods of Arracan, under the name of "thit-ka-do." We have, however, the authority of Wallich for saying that thit-ka-do is a species of *sterculia*, a genus that produces no valuable timber. Still, as it is possible that there may be only a mistake in the name while the thing itself exists, the remark is worth putting on record.

Cedrela Toona.

သစ်ကုန်း။

ACACIA.

Sirissa acacia is found on the Irrawaddy, and may exist in these Provinces. It is a large tree, and its wood is "dark coloured, and very hard." The fragrant acacia is indigenous in the Provinces, and is said to yield "a hard and strong timber." The largest timber tree belonging to the genus with which I am acquainted, is a common forest tree, and from the character of the genus would no doubt furnish valuable timber.

Acacia Sirissa.

" *odoratissima.*

" *stipulata.*

စင်၊ မြိပ်၊ ခုတ်။

DALBERGIA.

There is a large timber tree found throughout the Provinces, sometimes wrought into canoes, which I think is a species of *dalbergia*, but I have never seen it in flower. It is the tree of which, according to Burman geography, there is an immense specimen growing on the Great Eastern Island.

Dalbergia?

ကုက္ကို၊ ခေမာခွံ၊ ခွံ။

CHISEL-HANDLE TREE.

A common forest tree produces a hard, fine-grained wood which the Karens call the egg tree, and the Burmese the chisel-handle tree, its wood being much used for chisel handles. I have not seen the flower,

but the fruit identifies it with Roxburgh's genus *dalbergia*.

Dalbergia.

သစ်ဆောက်ရိုး

သို့တုတံ

သုန်ဆီခို

MAULMAIN LANCE-WOOD.

There is a tree found all over the Provinces which yields a wood that the residents at Maulmain sometimes call lance-wood. The Karens make bows of it, but prefer *Cassia fistula*. I have never met with the tree in flower, but think it a species of *dalbergia*, though it may possibly be a *cassia*.

Dalbergia ?

မြောက်ချော

မြောက်ချော

မြောက်ရိုး

သို့ဒွါရ

သုန်ဝါလီ

OAK.

Wallich found seven different species of oak growing in Burmah and on this Coast. Three or four are natives of the Provinces, and all afford useful timber, though inferior to the English oak.

Quercus fenestrata.

" *turbinata* (?)

" *velutina*.

သစ်တံ

သို့

သု

Quercus Amherstianus

Wall.

Tirbbæ.

"

JAROOOL.

The queen *lagerstrœmia*, or jarool, is an abundant timber tree in these Provinces, though very scarce on the other Coast. The posts of an old wharf at Tavoy which were of this wood, stood erect for twenty or thirty years; but house posts often decay in the ground in a much shorter period. It is considered a valuable timber in ship building. There is a smaller species of *lagerstrœmia* in our jungles whose wood is inferior, but it is sometimes confounded with the other.

Lagerstrœmia Regina.

ရင်းမ

ခမောင်းရိုး

ရွာ

သို့

ရင်းမ ခမောင်းမြို့ ရွာခရာ သို့ရွာ (Inferior timber.)

GREWIA.

At Tavoy, when vessels require spars they are usually furnished from a small tree which grows on the sea-board, belonging to the genus *Grewia*.

Grewia.

တရေခိး

CALOPHYLLUM.

House carpenters often use the timber of a species of *calophyllum*, and this tree also furnishes spars.

Calophyllum.

သရဲဘိး ဖုံညှင်း (Tavoy) ကဝံဝါး

GARCINIA.

A timber tree, the largest that I have seen of the genus *garcinia*, is in frequent demand for house posts in Tavoy.

Garcinia.

ပရဝါး ပဝါ့. ပဝါး

GORDONIA.

Gordonia is called "itch-wood" by the Tavoyers, from the itching which its chips or bark occasion when brought in contact with the skin. I have often seen its compact timber used for house posts, and for rice mortars.

Gordonia floribunda.

" *integrifolia*.

သစ်သား ဗါး. ကထိးသား

MANGROVE.

The species of mangrove most abundant along our shores furnishes a hard and durable timber. The tree is easily distinguished from its associates, for it drops no roots from its branches, but the trunk is divided into numerous roots for half its height, like a small bamboo pavilion.

Bruguiera Rheedii.

Rhizophora gymnorhiza.

မြဲ သိပ္ပံမာဓာ. သွန်ဖူးထီး

CAREYA.

An arboreous species of careya, a genus named after Dr. Carey, furnishes a useful timber for house building. In some parts of India matchlocks are made from a species of careya.

Careya arborea.

ဘန်ဘွေ။ ကမ္ဘီ။ (Tavoy.) ပဉ္စု။

သညာ်ဆုန်ပာ။ ပကွံင်။

MOUNTAIN JACK.

The mountain jack is deemed a valuable timber by the natives, especially for canoes. Wallich says: "It produces a sort of caoutchouc, with which the Burmese pay their boats." I imagine this is a mistake. The Burmese almost universally pay their boats with a substance that is produced by a bee, mixed sometimes with dammer.

Artocarpus echinatus.

တောင်မိ။ တောင်မိ။ (Tavoy.) ဖာ. မါ။

WILD NUTMEG TREE.

There are one or two trees, which I have noticed in the southern provinces, belonging to the genus which contains the nutmeg. The fruit has none of the aroma of the nutmeg, but the timber which is large, is used by the natives in house carpentry. Griffith found only one species, "apparently," he says, "referable to Lourier's genus knema." Wallich, however, met with two, and referred both to myristica.

Myristica amygdal'na?

" *spærocarpa?*

ကွဲသွီး။ ဘမုဗျ။ တုန်ကဗျ။

တောင်မိကား။ သျှါသျှါ။ ဆူးမိငါး ?

BIGNONIA.

The Karens often build their boats with the wood of a species of bignonia, as the genus is defined by Roxburgh ;

and the timber which is sometimes large is frequently used in joinery.

Bignonia.

သံသင်၊

ဖာဇာဗျာ၊

ဖိဆိယာ၊

SOUR SONNERATIA.

A species of sonneratia abounds in the mangrove swamps, and on the banks of almost every stream on the coast as far as tide-waters reach, which the natives use for various economical purposes, and it is said to be "a better substitute for coal in steamers than any other kind of wood."

Sonneratia acida.

တယ၊ တယ၊

သျှံးသျှံး၊

သွန်ခိန်ကျး၊

LAURUS.

A solitary post of a species of laurus is often found in Tavoy houses. There was one in mine, which the white ants selected in preference to all others; and as long as left undisturbed, they never wandered from home. It may be an advantage to have one post in a house of this timber, but one is quite sufficient.

Laurus.

ပန်းနုသား၊

KYANAN.

On the low lands near the sea-coast there is a large tree of which canoes are occasionally made, that is much used for sandals. The wood is red, but turns black on being anointed with petroleum. I have never seen the tree either in flower, or fruit; but it has pinnate leaves, with two pairs of oval leathery leaflets, and is, I imagine, a leguminous tree.

ကြန့်န့်၊ ကြတ်န့်န့်၊

MAYBYOUNG.

This is a hard, tough, knotty wood, which the Tavoyers select for anchors to their large boats, wooden anchors laden with stones constituting the greater part in use. I have never seen the tree.

ပဲလျောင်း၊

မေလဝင်၊

ဆူးသစ်၊

BEEF-WOOD.

Beef-wood is imported into the United States in considerable quantities, for various purposes where a hard heavy wood is required, and the casuarina on our Coast can furnish almost any quantity of this timber, but it is very little used. Roxburgh says it resembles toon in appearance. The natives call it by the same name as the pine.

Casuarina murica'a.

ထင်းရှူး ရှပ်—ဓမ္မဝဂ္ဂါ. ဆိုး

SOONDREE.

The soondree is a gloomy looking tree that may be distinguished from all others for many miles distant. It is remarkably characteristic of a peculiar soil. Wherever the tides occasionally rise and inundate the land, this tree is sure to be found throughout the whole Coast, but it is never found at home, either on the high dry lands on the one hand, nor in the wet mangrove swamps on the other. It is the tree which was described by Dr. Buchanan Hamilton, who accompanied Symmes' embassy, as *Heritiera Fomes*. It is the toughest wood that has been tested in India. When Rangoon teak broke with a weight of 870 pounds, soondree sustained 1312 pounds. It is not a very durable wood, but stands without a rival in strength, although so common on the other Coast, as to give name, as Captain Munro thinks, to the Soonderbunds, yet the tree grows much larger in these Provinces, and affords finer timber.

Heritiera minor.

" *Fomes.*

ကနရီ ကလေး (Tanoy.) ကရိပ်မိပ် ရေဝံ့ဝံ့.

TRINCOMALEE WOOD.

Dr. Helfer mentions the tree which produces the Trincomalee wood as growing on King's Island opposite Mergui. It is a light, strong, valuable wood.

Berrya Ammonilla.

MARTABAN CAMPHOR WOOD.

This is a very large tree, scattered sparsely throughout the Provinces. Wallich wrote that it was very like *Lau-*

rus glandulifera, which furnishes the sassafras, and camphor wood of Nepaul. The Karens call it the "tree gal-anga," from its fragrance.

Laurus. (Sassafras.)

ကရွေး " သိပ္ပံဝံ့. သွန်ဆူ.

SASSAFRAS.

A species of laurus with the odour of sassafras, is often used in house carpentry.

Laurus. (Sassafras.)

မှန်သင်၊ ငလင်ကျော်၊ ခေါ်၍၊ ကီးထွန်၊

ODINA.

At Maulmain a species of odina is quite common, which produces a valuable wood.

Odina Wodier.

ဝံ့ဘဲ၊ လိမ္မော်၊ ၂၇၅၅.

MOOTCHEE WOOD.

A species of erythrina supplies a soft, white wood, as easily worked as the pine, which might be made available for many economical purposes.

Erythrina indica.

ကသပ်၊ ဝံ့ဘဲ၊ ဆာထံ၊

MOUNTAIN CORAL TREE.

A fine looking timber tree of the same genus as the preceding, but producing a reddish wood, is not uncommon in the interior. The Karens select the tree in preference to all others on which to train their betel vines.

Erythrina.

တောင်ကသပ်၊ ဝံ့ဘဲ၊ ဆာမိ၊

KYAIZAI.

A species of laurus producing a hard wood used in carpentry, is seen in Tavoy, where it is called kyaizai.

Laurus.

ကျွဲ၊ ဘုံသံ၊ ဝံ့ဘဲ၊ ကသံ၊ ဝံ့ဘဲ၊

YAMANEE.

There is a tree on the hills which furnishes a remarkably light, white timber, resembling mootchee wood, of which the natives often make canoes. I have never seen the tree, but the Karens say it bears a yellow flower, and a small plumb which is a favorite food with the barking deer.

ယမနီ

မာ.

ကမာ

ELÆOCARPUS.

A hard valuable timber tree is very abundant in the neighbourhood of Rangoon, and not uncommon in some parts of these Provinces, belonging to the genus *elæocarpus*. Carts are sometimes constructed of it, and it is used in house and boat building.

Elæocarpus.

တောမကည်

သစ်မကည်

SALWEN.

The river salwen derives its name from a tree that grows on its banks of that name. I have never seen it, but from the fruit that has been brought me, I am enabled to state that it is a species of *elæocarpus*, and from the character of the genus, would probably yield useful wood.

Elæocarpus.

သံလွင်

ဘုၼ်

သင်္ဂလွင်

BLACK WOOD.

Under the Burman name of yendaik, the wood of two different trees is sometimes seen. One, a species of ebony, and the other a leguminous tree which, according to the descriptions of the Karens, is a species of *dalbergia*, and the wood resembles the black wood of Hindustan.

Dalbergia latifolia?

ရင်တိုက်

သစ်တဆိန် (Tavoy.)

သို့ဟိုလ

သုဉ်ဂုလ

r.

TENASSERIM LANCE-WOOD.

A tree which produces a timber possessing the properties of lance-wood is not uncommon in the Provinces, but it belongs to the dog-bane tribe, and is not at all related to *Guatteria virgata*, the lance-wood of commerce.

Apocynaceæ.

ဗျက်ဒွပ်နီ ဒဝံၤမၤပၤ. ခူးဒွပ်နီ

BURMAN BOX-WOOD.

The Karens have sometimes furnished me with specimens of a wood that can scarcely be distinguished from the box-wood of Europe, but I have never seen the tree. Wallich found *Nauclea cordifolia* on the banks of the Irrawaddy, which has "wood coloured like that of the box tree, but much lighter, and at the same time very close grained." It may possibly be the same tree, although the Tenasserim wood is not light; or it may be a Tavoy tree, which he says has "a strong tough wood, in grain like box."

Murraya.

မၤကၤယံ

SELUNG BOAT TIMBER.

The Selungs of the Mergui Archipelago shoot over their waters with remarkably light boats, and they owe their buoyancy to the materials that form their sides, which are the stems of the edible zalacca. These stems are as light, and of the consistency of cork, for which they are often substituted; and the Selungs are skilful in uniting them together to serve instead of planks, so as to make an unequalled sea boat, that floats on the waves like a swan.

Zalacca edulis.

ခၢ်ကၢ် ခၢ်. ခၢ်

DAMMER PINE.

Griffith mentions *Agathis loranthiflora*, or the dammer pine, as a member of the Tenasserim Flora, and I have seen the young plants of the tree to which he must refer. The leaf is precisely that of the dammer pine, but

It is not known to yield any dammer. The wood is white, rather light, and bears considerable resemblance to some kinds of pine. It is used by native carpenters for various purposes, and the Burmese have a superstition that the beams or balances of their scales ought to be formed of this wood. They call it *theet-men*, the tree-governor.

Agathis loranthifolia.

သစ်ပင်၊

သို့ဝါ၊

သံပိသု၊

PINE.*

Some twenty years ago the residents of Maulmain were not a little surprised to find, among the drift wood of the Salwen, a log of some coniferous tree. This was the first intimation that any tree of the pine tribe grew on the borders of these Provinces; but whether it were of the genus *pinus*, or *abies*, or *larix*—a pine, a fir, or a larch, did not appear. It was several years after this occurrence, that one of our former commissioners told me he had offered a hundred rupees to any of the foresters who would bring down a spar of this tree. Spars have been since brought down, but it is believed that Capt. Latter was the first European to visit the locality where the tree is indigenous, and from specimens of the foliage and fruit, which he brought away, it appears to be a new species of pine that may be characterized thus:

P. Latteri. Arbor 50—60 pedalis, cortice scabro, foliis geminis 7—8 uncialibus caniculatis serratis scabriusculo, strobilis 4 uncialibus ovato—conicis, squamis rombeis inermis.

Hab. In provincia *Amherst* : in convalli fluvii *Thoung-yeen*.

Descr. A tree of from 50 to 60 feet high, or more, and from $1\frac{1}{2}$ to 2 feet or more in diameter. Sheaths of the leaves arranged spirally, tubular, membranous, six

* Extracted from an article communicated by the author, in the Journal of the Asiatic Society for January 1849.

† Lindley says of the order, "Leaves—entire at the margins;" but these are certainly finely serrated; and I find *P. azulea* described with leaves "tooth-letted."

lines long. Leaves two from each sheath, equal, from 7 to 8 inches long, acute with a sharp point, convex on the back, slightly scabrous with eight rows, in pairs, of very minute thorns which produce a striated appearance, hollow on the under surface, serrated. Cones ovate-conical, nearly four inches long. Scales rhomboid, unarmed.

The flower is unknown. A single ripe cone that had cast its seeds, and a branch, being all the materials furnished for description. Specimens of the wood that have been brought in contain more resinous matter than any other species of coniferæ I ever saw. It appears like woody fibre immersed in resin. The Karens make tar from the wood, by a very simple process; and large quantities of both tar and pitch might be manufactured in the forests, if a remunerative price could be obtained for the article.

The tree is not found west of the Donaw mountains, a part of an unbroken granite range that runs down from the falls of the Salwen to the old city of Tenasserim, and which here separates the valley of the Thoungyeen from the region watered by the Gyaing and its tributaries.

This pine is not among the *twenty four* species described by Loudon as the denizens of Great Britain, nor among the *twelve* species described, and figured by Michaux in his "North American Sylva"; yet it may after all, prove to be a variety of *P. longifolia*, which it more closely resembles than any other species, but from which it differs, among other things, in having only two leaves to each sheath in the specimens I have examined, while that has three. Previous to publishing the above communication, a friend, Mr. Laidlay the Secretary of the Asiatic Society, submitted it to Dr. McClelland, while he was in charge of the Botanical Garden, and that gentleman, with *P. longifolia* growing in the garden before him, gave it as his opinion that the Tenasserim tree was a new species. If I have erred, therefore, in regarding it as such, I have done so with the highest official botanical authority in India.

Pinus Latteri.

ထင်းရှူး

၈၀၂.—၁၈၅၀ ခုနှစ်

မိုး

MAMMALIA.

Few persons are aware of the great difficulty that exists in ascertaining the species, and sometimes the genera of animals in an unexplored country, as these Provinces were some twenty years ago. At that time the rusa deer was, according to some authorities, a wild cow, and according to others, an elk; the gaur was a bison; the paradoxure, a racoon; the bamboo rat, a mole; the wild hog, a barbyrusa; the gymnura, an opossum; the wild dog, a wolf; the leopard, a cheetah; a deer the nylghau; the goat-antelope, a wild sheep; and we had "a goat with one horn resembling the celebrated unicorn," and twenty other animals which are now as really extinct in the Provinces as the mammoth and the megatherium, and for which one would no more think of looking than for the Dean of Westminster's pet, which he describes as

"O'er bog, or steep, through strait, rough, dense or rare,
With head, hands, wings, or feet, pursues his way,
And swims, or sinks, or wades, or creeps, or flies."

In those days the jungle traveller was entertained at evening by the natives around the brush fire, with wonderful descriptions of the extraordinary animals, that peopled the surrounding forests. One was found exactly like an elephant, but never had tusks, and was banded across the body with white. This proved to be the tapir. Another had a skin like a cow, a mane like a horse, and horns like a goat—the goat antelope. The third was half a dog and half a hog—the sand-badger. And a fourth was represented as in a transition state towards a monkey, just such an animal as would certainly become a monkey in the next state; this was the loris.

Since Mr. Blyth became Curator of the Museum of the Asiatic Society, by far the greater proportion of the mammalia of these Provinces and Arracan has passed under his eye; and to him we are principally indebted for our knowledge of species.

• The Pterodactyle.

•

MONKEY TRIBE.

Five species of *Quadrumana*, the monkey tribe, have been found in these Provinces, and the Karens have names for two others, a small grey white-eyelid monkey,* and a red-rumped pig-tailed monkey;† but these may prove to be varieties of the other species. Arracan has two species that have not been seen in these Provinces.

WHITE-HANDED GIBBON, OR LONG-ARMED APE.

The first sounds that usher in the morning in the Karen mountain glens, are the wailing cries of the gibbons on the hill sides around. The whole of the interior of the Provinces is alive with them; and their habit of screaming as soon as the day dawns is celebrated in Karen poetry.

There are all varieties of shade in their colouring, from tawny white to jet black.

<i>Hylobates Lar</i> ,	Ogilby.
<i>Grand Gibbon</i> ,	Buffon
<i>Homo Lar</i> ,	Linne, Mantiss.
<i>Simia longimana</i> ,	Schreber.
<i>Simia Lar</i> ,	Linne Syst.
<i>Pithecius Lar</i> ,	Desmarest.
<i>Simia albimana</i> ,	Vigors and Horsfield.
<i>Hylobates Lar</i> ,	Lesson, apud Martin.
<i>Hylobates albimanus</i> ,	Schinz.

LIGHT-COLOURED VARIETY.

<i>Petit Gibbon</i> ,	Buffon.
<i>Hylobates variegatus</i> ,	Ogilby.
<i>Hylobates leuciscus</i> ,	Cantor.
မောက်ညွဲကျော် (ချေးထိုချေးတာ" Arracan.)	
ဇေဗာဗွံ. ကယုဇုန်	

HOOLOCK GIBBON.

The long armed ape of Arracan is a different species from the preceding, which is the only one that has

* တကြံ † တဆူးဂါခံ

been found in these Provinces. Both are called by the same native names.

Hylobates hoolock.

WHITE-EYELID MONKEY.

This black monkey has a white ring around the eyes, which gives it a peculiar appearance, and is probably the negro monkey of Pennant. It is found in considerable numbers in the interior, but is not so numerous as the other monkeys, and the gibbons. Though heretofore regarded by Mr. Blyth himself, as identical with *S. obscurus*, he has recently written me that he now considers it the same as *S. Phayrei*, a new species, which he described originally from Arracan specimens.

Semnopithecus obscurus, Reid.

" *leucomystax*, Temm.

" *summatranus*, Muller.

" *halonifera*, Cantor.

Simia maura ? Lin.

Presbytes obscurus, Gray.

" *Phayrei*, Blyth.

မောက်ကွင်းမြို့ (မောက်မြို့) Tavoy. Arracan.)

တော့ခိုင် မဒွာမိုး.

BARBE'S WHITE-EYELID MONKEY.

This monkey abounds in the forests of Yay, and is nearly allied to the preceding species. Mr. Blyth says: "It is intermediate between *P. Phayrei* and *P. obscurus*; but seemingly, distinct from both. There is no vertical crest, as in the former; nor is the occipital hair lengthened and conspicuously much paler, as invariably in the latter species: but the shoulders and outside of the arm are silvered in both specimens; and the under parts resemble those of *P. obscurus*. The tail is very slightly paler than the body; whereas in twelve adults of *P. obscurus* (lying together before me, at the time of drawing up this description), the tail is in every one much paler than the body."

Presbytes Barbei.

FISHER MONKEY.

This monkey is more numerous in individuals than any other species in the Provinces. It abounds on the sea-shores, and on the banks of inland streams, especially on tide-waters, where it appears to draw a large portion of its sustenance from the crabs, and shell-fish found on the banks. Hence the Burmese have named it the "fisher monkey," and when the tide is out, a whole troop is often seen issuing from the jungle to conchologize. Some are observed turning over stones in diligent search of shell-fish, others breaking up the shells they have found to get at the animals within; but most seem to be in search of small crabs, and wherever the trace of one appears, a monkey will thrust down his arm up to the shoulder, if necessary, to draw it out of its hole. Fruits, however, are as acceptable to them as shell-fish. On one occasion, coming down close in-shore at the mouth of the Tenasserim, a troop of them followed my boat for a considerable distance, being attracted by the plantains that we threw out, which they picked up and ate with great avidity.

The apes, that Solomon's fleet brought from Ophir, were probably monkeys of the genus to which this species belongs. They abound in Hindustan, and their Sanscrit name is *kape*. The Hebrews and Greeks appear to have adopted the name by which the animals were known in their native country, for they were called in Hebrew *koph*, and in Greek *kephos*, and *krebos*, which Scapula says, was an animal of the genus *simia*, "having a tail—*caudem habens*;" so they were not apes, as the word is used in zoology, but monkeys.

<i>Cercopithecus cynomolgus</i> ,	Ogilby.
<i>Simia cynomolgus</i> ,	Linne.
<i>Simia aygula</i> ,	Linne.
<i>Simia attys</i> ,	Schreber.
<i>Macacus cynomolgus</i> ,	Desmarest.
<i>Simia fascicularis</i> ,	Raffles.
<i>Cercopithecus aygula</i> ,	Geoff. apud Horsfield.
<i>Inuus cercopithecus</i> ,	Blyth.

ချောက်တင်

မာဒေ့ဘ်

တေးရူးထံ

COALY-MONKEY.

The coaly-monkey is common in Arracan, where it has the same vernacular names as the preceding species, which it much resembles.

Macacus carbonarius.

“ *cancrinorus,* Blyth.

LONG-HAIRED PIG-TAILED MONKEY.

This monkey is least common of all the species in the Provinces, but it is most frequently seen in confinement. It is found inland, but rarely if ever on the banks of streams.

Inuus arctoides, Blyth.

Macacus “

It has been referred to the following allied species :

Papio nemestrinus, Ogilby.

Simia nemestrinus, Linne.

Simia Platypygus, Schreber.

Simia fusca, Shaw.

Macacus nemestrinus, Desmarest.

Simia carpolegus, Raffles.

Inuus nemestrinus, Blyth.

ကျောက်ပုတီး (ကျောက်လဟိုင်း Arracan)

မဒဒမာဝံ့ တားဆူးထီး

LEMUR, OR BENGAL SLOTH.

The lemur, Bengal sloth, or slow loris, as it is variously named, is found in the Provinces, but is not abundant. The Karens say that were it to enter a town, that town would assuredly be destroyed.

Nycticebus tardigradus, Waterhouse, Cat.

Lemur tardigradus, Linne apud Raffles.

Nycticebus bengalensis, Geoff.

Nycticebus javanicus, Geoff.

Loris tardigradus, Geoff.

Stenops javanicus, Van der Hoeven.

Stenops tardigradus, Wagner, apud Schinz.

ကျောက်ဆောင်းမ (ကျောက်ဆောင်း Tavoy)

မဇ္ဈိ. ကဆူး

BAT TRIBE.

The *Cheiroptera*, or bats, are numerous represented in these Provinces and Arracan; but little progress however has been made in the identification of species. Four are known, but they are not probably a moiety of the number that exists.

FLYING FOX.

This large bat has been very appropriately named, for it bears a strong resemblance to a small fox in every thing but its wings. Nor is it very small. Adults measure from three to four feet across the wings from tip to tip. They abound on the Coast, and it is quite impossible to keep ripe fruit from their depredations, without inclosing it in basket work. When guava trees are bearing, half devoured fruit will be found under them every morning, which the flying foxes have rejected. In some sections they may be seen in great numbers hanging by their heels in the tops of palmyra palms.

<i>Pteropus edulis</i> ,	Geoffroy.
" <i>javanicus</i> ,	Desm. apud Horsfield.
" <i>Edwardsii</i> ,	Geoffroy.

လင်ဆွဲ၊ လင်ဝက်၊ ဖျာဖဝံ့၊ ဘျီဖဒိန်

CAVE BAT.

Every one who visits the limestone caves of the Tenasserim coast is startled with their bat-wing music. Suddenly on entering these subterranean halls, thousands of bats rush from their dark recesses, and wheel over the traveller's head with the deep whizzing sounds of a passing water-spout. And then they hang trembling and rustling their wings in the lofty black galleries above, like a choir of wind harmonies muffled in the mountains.

The large quantities of guano accumulated in the caves inhabited by these bats, might be turned to a profitable account by our horticulturists.

<i>Scotophilus Temminckii</i> ,	Gray.
<i>Vespertilio Temminckii</i> ,	Horsfield.
<i>Vespertilio Belangerii</i> ,	Isid. Geoff.

<i>Vespertilio noctulinus</i> ,	Isid. Geoff.
<i>Scotophilus castaneus</i> ,	Gray.
<i>Nycticeius Temminckii</i> ,	Schinz.
<i>Nycticeius Belangerii</i> ,	Temminck, apud Schinz.
<i>Nycticeius noctulinus</i> ,	Temminck, apud Schinz.
လင်းခိုး၊	ကျာဗ်ခါး၊
	ကျွဲခါး။

HORSESHOE, OR LEAF-NOSED BAT.

This bat has an appendage on the nose, which is either a horse-shoe or a leaf, at the pleasure of the observer. It is not to be confounded, however, with the *phyllostoma*, an American genus. The Karens call it the broken-nosed bat. I think there are two species; one is of a yellowish colour. Mr. Blyth has received the two following from Arracan :

<i>Hipposideros vulgaris</i> ,	Gray.
<i>Rhinolophus</i> “	Horsfield.
“ <i>insignis</i> ,	Temm.

<i>Hipposideros larvatus</i> ,	Horsfield.
လင်းခိုး၊	ကျာဗ်ခါး၊
	ကျွဲခါး။

SMALL BAT.

The smallest species of bat in the Provinces differs from all the preceding, both in form and habit. It ought to be called the domestic bat. I had one quite domiciled in my house, where it would hang by its heels all day, under the bedstead, without creating the least disturbance. But when night came it would make a few evolutions round the room, and then fly away. It was always, however, home again by daylight in the morning.

On another occasion; a whole family took up their abode in a small space between a post in the house and a partition; and they are often found in the hollow ends of bamboos in the roof. In an old brick building that Dr. Judson occupied in Rangoon, they were so numerous in the upper story, that he killed two hundred and fifty in one day.

လင်းခိုး၊	ကျာဗ်ခါး၊	ကျွဲခါး။
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INSECT-EATERS.

Three genera of *Insectivora*, or insect-eaters, have been discovered in the Provinces.

JAVANESE TUPAIA.

The tupaia is a small animal resembling a squirrel, but with a longer head. It was first discovered in Java, where it is considered by the natives as a species of squirrel. In dentition it resembles the hedgehog.

The Karens describe a striped species as inhabiting their forests, larger than the above.

Tupaia javanica, Horsf.

" *peguana*, Lesson.

ဝဲ. ကော့ခွါ. ဆဲ. ဆဲရှုနီ (ဆဲလိပ်လျှင်. *Striped.*)

MUSK SHREW.

The musk shrew is usually called in India the musk rat; but it is a very different animal from the musk rat of America. We have at least two species, both of which emit an offensive odour, so much so that when put together with a cat in the same box, the cat will not touch them. They are readily distinguished when in a house from the common rat, by a peculiar shrill squeel which they frequently utter.

I sent Mr. Blyth a specimen of the smallest species, and he wrote: "Mr. Gray identifies this minute shrew with *S. pusillus*, S. G. Gmelin, *Reise* III, 499, t. 75, f. 1, and suggests it to be the *S. pygmæus*, Pallas, *S. exilis*, Gm. *Syst. Nat.*, and *S. cæcutiens* v. *minutus*, Laxm."

Sorex Peyrotettii, Guerin.

" *pygmæus*, Hodgson.

ကြက်စုတ် ဗရ. သံယွှ်း နီသံယွှ်း

GYMNURA.

Mr. Blyth says: "The genus *gymnura* has been ascertained to exist in the Provinces, being probably the opossum of Capt. Low; if not also the marsupial adverted to by Dr. Helfer."

Gymnura Rafflesii ?

CARNIVEROUS ANIMALS.

The *Carnivora*, or carnivorous animals, count between twenty and twenty five species in these Provinces; and two or three others in Arracan.

MALAY BEAR.

The Malay black bear, much resembling the black bear of America, is not uncommon in the interior. On one occasion, while sleeping in a Karen field that had been recently harvested, I was disturbed all night by a drove of them digging up the roots of the sugar cane that had been left in the field. They will occasionally attack a man when alone. On descending the Tenasserim a few years ago on rafts, the foremost raft passed over a rapid, and made a short turn into a little cove below, when a bear from the shore made a plunge at the raft, and threw the two Karens on it into the water. At this moment the other rafts came in sight, and the bear retreated. On another occasion I met with a Burman and a bear that he had just shot, and the Burman assured me that he shot the bear in the very act of running upon him.

The Kemees and Karens describe a smaller species, yellow on the breast, for which they have a distinctive name; but I imagine it is a variety of the above. The Burmese and the northern Karens say there is a species with feet and hands like a man, which they call man-bear. This I suspect to be a fabulous animal, founded on reports of the orang-outang.

Ursus malayanus.

ဝက်ဝံ၊ ဖာဖာ၊ တာသုးထီမု၊
 ဖာဖာပွါ၊ ထီသုး (Karen small species.)
 လုဝံ၊ တာသုးကညီ၊ (man-bear.)

PIG-BEAR.

The pig-bear, or sand hog, or Indian badger, or sand badger, as it is variously named, is not rare, especially in the southern provinces. It has the general appearance of a hog, with claws like a bear, but the Burmans say it is half hog and half dog.

Arctonyx collaris.

ရွေးတဝက်၊ ဝက်တဝက်၊ ရွေးတူ၊ ဝက်တူ၊ မေလုံ၊ ဂံ၊ ဖုံ၊

MONKEY-TIGER.

This animal was first discovered in Malacca a few years ago, and it is not known to exist north of these Provinces, though it is probably found to some extent in Burmah Proper. Monkey-tiger is a translation of its Burmese name, and is somewhat descriptive of its character. It is about the size of a small monkey, with a long retractile tail, and is both arboreal and terrestrial in its habits.

<i>Arctictis Binturong</i> ,	Fischer.
<i>Viverra? Binturong</i> ,	Raffles.
<i>Paradoxurus albifrons</i> ,	F. Cuvier.
<i>Ictides ater</i> ,	F. Cuvier.
<i>Arctictis penicillata</i> ,	Temminck.

မျောက်ကြား၊ ကြောင်မီးကောက်၊ ဇာ. ကရုန်၊

WEASEL.

Capt. Phayre met with an animal of the weasel tribe in Arracan, and it probably exists in these Provinces, though it has not yet been discovered.

The Hebrew word rendered weasel, in Leviticus, is identical with the Arabic *khalad*, which signifies a mole.

<i>Helictes Nipalensis</i> ,	Hodg.
<i>Gulo orientalis</i> ,	Horsf.

ကြောင်ငြိန်၊

OTTER.

Otters abound in some of the streams. In the upper part of the Tenasserim, a dozen at a time may be occasionally seen on the rocks in the river. The Burmese sometimes domesticate them, when they will follow a man like a dog.

<i>Lutra leptonyx</i> ,	Blyth.
<i>Lutra Barang</i> ,	Raffles.
" <i>Barang Barang</i> " or <i>Ambrang</i> ,"	Raffles.
<i>Lutra Simung</i> ,	Schinz?

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The Arracanese otter is a different species.

<i>Lutra Nair</i> ,	Fred. Cuvier.
<i>Lutra indica</i> ,	Gray.

DOMESTIC DOG.

Among the introduced animals, is the domestic dog.
Canis familiaris.

ငွေ၊ ဂွံ၊ ထွံ၊

WILD DOG.

There is a wild dog in the Provinces which Mr. Blyth regards as a distinct species; and the Karens have described to me an animal that makes his kennel in the ground like a fox or a jackal, which they say is found in the Shan' country. The fox of the English bible is probably the jackal. The Hebrew word is *shugal*, the Persian name of the jackal is *shaghal* and *shakal*, and the Pali* is *thengala* or *shengala*, from the same root, which the Burman books render "earth-dog."†

Canis rutilis.

တောငွေ၊ ဂွံမာ၊ ထွံမံ၊

MALACCA CIVET.

The Indian civet-cats secrete an odoriferous substance identical with civet, though not the civet of commerce. This species is not infrequently found in the villages, and its secretion enters into the Burmese Materia Medica.

Viverricula malaccensis.

<i>Viverra malaccensis,</i>	Gmelin.
" <i>Rasse,</i>	Horsfield.
" <i>Gunda,</i>	Buchanan Hamilton MSS.
" <i>indica,</i>	Geoffroy.
" <i>bengalensis,</i>	Gray : Illustr.
" <i>pallida,</i>	Gray : Illustr.
<i>Genetta manillensis,</i>	Eydoux.

ကြောင်ကထိုး၊ (ဝယောင်ကြောင်ပြောက်၊ Arracan.)
 ဂွံမာမံ၊ တာနာမံ၊ ထီးထူ၊ ထီးမံ၊

* သိလ၊

† မြေငွေ၊

ZIBETH CIVET.

This is another species of civet-cat, not so abundant as the preceding, which the Burmese call "the horse-cat," from the mane on its neck.

<i>Viverra Zibetha</i> ,	Linne.
" <i>undulata</i> ,	Gray.
" <i>melanurus</i> ,	Hodgson.
" <i>orientalis</i> ,	"
" <i>civettoides</i> ,	"

ကြောင်မြင်း

THREE-STRIPED PAGUMA.

This animal is very common, and occasionally enters houses in the towns in pursuit of rats. When young it is easily domesticated, and valuable as a rat-catcher. It does not appear to have been seen in Arracan.

<i>Paguma trivirgata</i> ,	Gray.
<i>Viverra</i> "	Reinwardt, Mus. Leyd.
<i>Paradoxurus trivirgatus</i> ,	Gray.

ကြောင်နဂါး၊ ဘုံဘုံ၊ ဖိးဖိး၊

COMMON PARADOXURE.

This paradoxure inhabits the Provinces, but I have never examined the species. It is probably identical with the one in Arracan.

<i>Paradoxurus Musanga</i> ,	Gray.
<i>Viverra hermaphrodita</i> ,	Pallas, apud Schinz.
" <i>fasciata</i> ,	Gmelin?
" <i>Musanga</i> ,	Marsden, Raffles.
<i>Musang bulan</i> ,	Raffles.
<i>Ichneumon prehensilis</i> ,	Buchanan Halmilton.
<i>Platyschista hermaphrodita</i> ,	Otto
<i>Paradoxurus Pallasii</i> ,	Gray
" <i>Crossii</i> ,	"
" <i>dubius</i> ,	"
" <i>Musangoides</i> ,	Gray
" <i>typus</i> ,	apud Schlegel.
" <i>felinus</i> ,	Wagner, apud Schinz.

ကြောင်ပုံ၊ ဘုံဘုံ၊ ဖိးဖိး၊

WHITE-EARED PARADOXURE.

A paradoxure distinguished by white-tipped ears, is not very rare in the Provinces.

Paradoxurus leucorhinus, Blyth.

ကြောင်နားရွက်ဖြူ ခပ်ခပ်ခပ်ခပ်နီ၊ ထီးထီးဝါနီ၊

UNDESCRIBED PARADOXURE.

An undescribed species has been sent up to Calcutta from two of these Provinces, and from Arracan, but it has not yet received a name. The natives do not distinguish it from the common paradoxure.

TENASSERIM ICHNEUMON.

This animal is not the genuine ichneumon, but it belongs to the same family, and has its habits. It is remarkable for devouring snakes.

Urva cancrivora, Blyth.

မြွေသတ်၊ ဂရုခွါမံဒဂ်၊ ထီးဆိန်၊

ROYAL TIGER.

Tigers are sufficiently abundant in the Provinces, almost everywhere. Twice during my residence at Tavoy they came into the gate of my compound, broke open the door of the goat-house, and succeeded in killing a goat each time before they could be routed. On another occasion, while sleeping in a jungle hamlet, a tiger leaped into a buffalo pen close by the house, and killed a buffalo. They appear to be afraid to encounter a man until they have once entered the contest with him, when all fear ceases ever after. I have encamped in the jungles often, where the tracks of tigers were seen all around in the morning within a few yards of where myself and people had bivouacked, yet they never ventured an attack. But whenever a tiger has once tasted human blood it ever after seeks it in preference to all other.

A Burman was struck down by a tiger at the head of Tavoy river, and he was seen by his companions to inflict a severe wound on his antagonist with his knife, but

was carried off. A few months afterwards, a Karen was killed by a tiger in a village twenty miles distant; and when the villagers subsequently succeeded in killing the animal, it was found to have been wounded as described by the Burmans. A Karen was killed by a tiger near a village a dozen miles east of Tavoy, supposed to be the same beast that had devoured a man ten miles distant a short time previous. This Karen was carried off after breakfast in the morning while going out alone to his work in the field; and in less than a week from that time a Burman was struck down by a tiger in the middle of the day, not six miles distant, and when there were eight other men in company.

A Karen who was killed by a tiger near the forks of the Tenasserim, was walking with three others in company a couple of hours before sunset, and had a gun on his shoulder. The Karens that lived nearest immediately set traps in the paths that led to their villages, and the animal was soon caught near one of their houses.

On one occasion I reached a lone Karen cabin at dusk, and was surprised to find it barricaded all around to prevent access. On inquiry I found that two men had been devoured by a tiger the day before in the neighborhood close by. It appeared that one man had been carried off, and five others then armed themselves and went in pursuit. After half a day's search, and while on the track, the beast came out boldly on the plain and succeeded in carrying off one of the armed Karens that had engaged in the pursuit.

A few years ago a little body of Karens removed from Yay, and settled on the upper part of Tavoy river; but after losing four or five men in as many different years by the tigers, they have been compelled to descend into the more populous part of the valley.

These few facts, which might easily be multiplied, have been mentioned, because the opinion has gone abroad that Tenasserim tigers are not dangerous. Dr. Helfer wrote: "They are of quite a different nature from those in Bengal, and probably more afraid of men, than men of them. Accidents very seldom happen to natives, who

penetrate daily into untrodden jungles, sometimes quite alone."

Such representations may prove fatal to strangers and persons new in the country, as they already have in the case of Dr. Woodford, who lost his life by a tiger on the Ataran a few years ago, wholly owing to his want of suitable precaution in going away from the boat near evening to shoot a peacock.

Felis tigris,

Linne.

Tigris regalis,

Gray.

ကျား

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ခရီး၊ ဘိဉ်သမိဉ်

LEOPARD.

Leopards are probably more numerous than tigers, and they will sometimes attack man, though he seek refuge in the tree tops. Two Karens were travelling on one occasion in the forests of Maulmain, and when daylight departed, they made little bamboo platforms to sleep on during the night in the branches of a large tree, one on a lower main branch, and the other on an upper large branch. During the night, the man on the lower branch was awakened by what he thought to be a tiger, but it must have been a leopard, creeping up the body of the tree above him. It had passed his branch, and was climbing up to where the other man slept. He called out—the man answered, and the leopard was still—not a claw moved; but the sleeping man could not rouse himself, and in a few minutes the leopard rushed up, seized the man in his sleep, and jumping down with him, devoured him at the foot of the tree, regardless of all the noise the narrator of the story could make in the tree above him.

Felis leopardus,

Schreber.

" *Pardus*,

Linne. ?

" *varia*,

Schreber.

" *Panthera*,

Erxleben.

" *chalybeata*,

Hermann.

" *antiquorum*,

Fischer.

" *fusca*,

Meyer.

" *Nimr*.

Ehrenberg,

Leopardus varius,

Gray : List.

Apud Gray :
List.

BLACK LEOPARD.

Black leopards, commonly called black tigers, are frequently met with in Tavoy province. They are dangerous beasts. A few years ago a Burman was devoured by one not eight miles distant from Tavoy city.

Felis melas, Gray.
Felis leopardus, var. *melas*, (Blyth.)

ကျာဝဲ။ မိာၤကျာ။ ခုသု။

LEOPARD-CAT.

This is the handsomest animal of the tiger tribe in the Provinces. It is spotted with black, like a leopard, on a yellowish ground, and is as large as a small dog. It is very fierce. A Karen whom I knew was attacked by one and his arm shockingly lacerated; but he was saved by his dog, which seized the cat when it attacked his master, and the man and dog together proved too much for it.

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TIGER-CAT.

This animal is about the size of a cat, but its colour and markings are exactly that of a tiger. These cats are very abundant in the jungles, and occasionally venture into towns, where they make great havoc among the poultry. Capt. Low called it the "fox-cat."

တောကြောင်။ ဘိယံဇု။ ထီးဆီး။

BENGAL TIGER-CAT.

This is an entirely distinct species from either of the preceding, all of which I have seen, and is much less common.

Felis Bengalensis.
 တောကြောင်။ ဘိယံဇု။ ထီးဆီး။

NEPAUL TIGER-CAT.

This animal Capt. Phayre found in Arracan, and Mr. Blyth writes me, "add *Felis macrocelis*, from Arracan;" but

he thinks that the above, with the preceding three cats, are probably all varieties of the Javanese tiger cat.

Felis nepalensis.

သစ်ကြောင်၊ သစ်ကျွတ်၊ ကျားကျွတ်။

The following names, then, may be regarded as designating the same species.

Felis javanensis.

Desmarest.

" *minuta*,

Temminck.

" *bengalensis.*

" *nepalensis.*

CHAUS.

There is an animal of the tiger tribe which the Karens call the fire-tiger, from the colour of its skin, which is of an uniform red. It is probably the chaus, a large wild cat, sometimes denominated a lynx, that Capt. Phayre found in Arracan.

Felis chaus.

ကြောင်စက်ခို၊ ဝါမာ၊ ခုဗ်း။

DOMESTIC CAT.

Sir Stamford Raffles says: "Some of the Maylayan, like the Madagascar domestic cats, have a short twisted or knobbed tail." This is a peculiarity that characterizes the cats on this Coast.

Felis domestica.

ကြောင်၊ မာ၊ ဗမာ၊ သင်္ဃာယ်။

GNAWING ANIMALS.

Fifteen species of *Rodentia*, or gnawing animals, are known to exist in the Provinces, and four others in Arracan; while, owing to their small size, it is highly probable that there remain other species to be discovered.

TWO-COLOURED SQUIRREL.

The two-coloured squirrel has been appropriately named the giant squirrel, for it is as large as a cat. It is deep black on the back, and whitish yellow below. Its Karen name signifies the yellow-neck, being more particularly yellow on the front part of the neck.

<i>Sciurus bicolor</i> ,	Sparmann.
" <i>giganteus</i> ,	M'Clelland MSS.
" <i>madagascariensis</i> ,	} Apud Gray.
" <i>macruroides</i> ,	
	Hodgson.

GOLDEN-BACKED SQUIRREL.

The golden-backed squirrel which bears a considerable resemblance to the American gray squirrel, is peculiar to the Tenasserim Provinces, and like that is considered very good eating. Its general colour is gray, with a tinge of yellow on the back.

It is described by Mr. Blyth, as "the size of *Sc. Rafflesii*, or measuring about 20 in. long, of which the tail is half, its hair reaching 2 in. or 2½ in. further. General colour grizzled fulvous above, the limbs and tail grizzled ash (from each hair being annulated with black and pale fulvescent), with an abruptly defined black tip to the latter: under-parts and inside of limbs pale grizzled ash: in bright specimens, the nape, shoulders, and upper-part of the back, are vivid light ferruginous or golden-fulvous, sometimes continued to the tail, more generally shading off gradually towards the rump, and in some but slightly developed even upon the nape and shoulders: whiskers long and black; and slight albescent pencils to the ears, more or less developed."

Sciurus chrysonotus.

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BLACK-BACKED SQUIRREL.

This is an ordinary sized squirrel, the upper parts grizzled with black, on a golden ground, with a superb bushy tail.

Sciurus atrodorsalis.

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RUSTY SQUIRREL.

The rusty squirrel, first found in Pegu, is met with in these Provinces, but is not abundant. Blyth describes it as according in size "with *Sc. vittatus*, except that the tail is longer and more bushy. Entire upper-parts uniformly grizzled, much as in that species, or more especially as

On the tail of that species—the tip of the tail being black : under-parts, inside of limbs, fore-paws above, and almost the entire hind limbs exteriorly, together with a broad median line to the tail underneath continued to its black tip, bright ferruginous-chesnut ; that of the belly bordered laterally with black : whiskers black. Specimen *a*, assigned *Sc. erythræus* in Mr. Gray's catalogue of the mammalia in the British Museum, seems referrible to this."

Sciurus pygerythrus.

BARBE'S SQUIRREL.

This is a beautiful little squirrel, striped with nine alternate lines of black and rusty white, and somewhat resembling the American ground squirrel. It is, however, a new species, abounding in the Provinces of Yay, Tavoy, and Mergui.

Sciurus Barbei.

၅၆" လုံပလါး. လံာ်သံ

BERDMORE'S SQUIRREL.

This is a large striped squirrel, often seen in the southern Provinces.

Sciurus Berdmorei.

၅၆" လုံပလုံ. လံာ်သုရ်

RED SQUIRREL.

The red squirrel has not yet been seen in the Provinces, but Capt. Phayre found it in Arracan. It is "entirely of a deep rufo-ferruginous colour, rather darker above than below—toes of all the feet blackish, "tip of the tail yellowish white."

Sciurus Keraudrenii,

Lesson.

" *ferrugineus,*

Cuvier.

၅၆" လုံပ

ASSAMESE SQUIRREL.

Capt. Phayre met with this species also in Arracan, but no one has yet found it in the Provinces. It is described as being more or less rufescent all over.

Sciurus lokroides,

Hodgson

" *assamensis,*

M'Clelland.

YELLOW-BELLIED SQUIRREL.

This is another species which Blyth says inhabits Arracan, but which is unknown in these Provinces.

<i>Sciurus lokriah,</i>	Hodgson.
" <i>subflaviventris.</i>	M'Clelland.

LARGE FLYING SQUIRREL.

We have one or two species of that graceful, elegant group, the flying squirrels. The largest Blyth regards as a variety of *Pteromys petaurista*, "but the whitish tips to the fur more predominating, imparting a hoary-grey appearance to the whole upper surface, and continued along the tail, the extreme tip only of which is blackish; under parts pure white, or nearly so, in different specimens; and the rest of the colouring much as in the preceding variety. (?) In both, the white tips to the fur predominate in the newly put forth pelage, and disappear to a great extent as the fur becomes old and worn. In the young of the Arracan race, the black extreme points of the fur are much developed."

In the specimens that I have examined in these Provinces the ears are tipped with white.

Pteromys petaurista.

"	<i>oral,</i>	Tickell.
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"	<i>philippensis,</i>	Gray.
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<i>Taguan,</i>		Buffon, from Malabar.
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SMALL FLYING SQUIRREL.

The small species inhabits the southern provinces, but no one seems to have obtained specimens. I judge it, however, to be identical with the small flying squirrel of Arracan. "A diminutive species about 5 inch. in length, minus the tail, which measures $4\frac{1}{2}$ inch.; tarse to end of claws $1\frac{1}{8}$ inch. Upper surface bright ferruginous-bay in old specimens, with the membrane, limbs and tail, dusky, and the basal fourth of the latter pale rufous underneath: under-parts dull white, with fur of a somewhat woolly texture: that of the upper-parts dusky except at tip."

<i>Pteromys spadiceus,</i>	Blyth.
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BANDICOOT RAT.

The bandicoot rat is abundant, and its nocturnal depredations in our fowl-houses are very frequent. It burrows in the earth, and rarely appears in the interior of a dwelling house.

<i>Mus bandicota</i> ,	Bechstein,
" <i>giganteus</i> ,	Hardwicke.
" <i>malabaricus</i> ,	Shaw.
" <i>perchal</i> ,	Shaw.
" <i>Icria</i> ,	Buchan. Ham. MS.
" <i>nemorivagus</i> ,	Hodgson.

မြကြက် အဖဝါ. လှီးခိဒ်.

BROWN RAT.

This species usually makes its home in the roofs of houses, and is one of the greatest pests in the country. They will eat into teak drawers, boxes, book-cases, and will try their teeth on almost any thing.

<i>Mus rufescens</i> ,	Gray.
" <i>flavescens</i> ,	Elliot.
" <i>rufus</i> ,	Elliot.

ကြက်ဝံမြ ဗဒ. လှီး.

WATER RAT.

There is a water rat in the jungles which appears to have the habits of the European water rat; but Mr. Blyth writes me that he doubts our having a species of

Arvicola.

ရေကြက် ဗဒဘိ. လှီးထံ.

FIELD MOUSE.

The Karens describe a field mouse with the same habits as the field mouse of Europe. According to Karen astronomy, the north star is a mouse, creeping into the proboscis of the elephant, as they call the constellation of the Great Bear.

The mouse of our English Bible was probably the jerboa, an animal with the habits of our bamboo rat, and like that eaten by the inhabitants of the country where it is found.

လယ်ကြက် ဗဒ. လှီးသုဉ်း လှီးကစီး.

BAMBOO RAT.

This animal, which burrows under old bamboo roots, resembles a marmot more than a rat, yet it has much of the rat in its habits. I one night caught a specimen gnawing a cocoanut, while camping out in the jungles. The Karens say there are two species, but I have met with only one.

<i>Rhizomys, sumatrensis,</i>	Gray.
<i>Mus sumatrensis,</i>	Raffles.
<i>Hypudeus de Sumatra,</i>	Temm.
<i>Nyctocleptes Dekan,</i>	Temm.
<i>Spalax javanus,</i>	Cuvier.
<i>Rhizomys chinensis,</i>	Gray, apud Schinz.
" <i>cinereus,</i>	M'Clelland.
" <i>Dekan,</i>	Schinz.

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LARGE PORCUPINE.

A large porcupine is not uncommon, but the precise species is not known. It is probably identical with one of the Malay species. The one found in Arracan is the common Indian species, and ours may possibly be the same.

Histrix leucurus. (Arracan)

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SMALL PORCUPINE.

There is a small porcupine in the Provinces, which does not appear to have been discovered in Arracan. According to native description, it best accords with the small species described by Hodgson.

Hystrix alophas?

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HARE.

Hares are said to have been seen on the northern borders of the Provinces, and Mr. Blyth is acquainted with one from Pegu, which is the same species without doubt.

Lepus auicaudatus, Blyth.

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RABBIT.

Rabbits have been introduced, and when well tended, they breed very abundantly.

Lepus cuniculus.

မိုးကောင်း.

TOOTHLESS ANIMALS.

The *Edentata*, or toothless animals, have only one representative in these Provinces, and another in Arracan.

PANGOLIN.

The scaly ant-eater is not very rare here, and so far as I can judge, it is the same species as the one found in Malacca, though there is not a perfect correspondence. It has not the difference in colour at the end of the tail which is characteristic of the Arracan species.

Manis javanica

Desmarest.

“ *pentadactyla*,

Lin. apud Raffles.

“ *aspera*,

Sundeval.

“ *quinquedactyla*,

Raffles, apud Gray : List.

သင်္ဃေဒ္ဒိ

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ထီးပိန်.

ARRACAN PANGOLIN.

The scaly ant-eater of Arracan is another species, but called by the same native names.

Manis leucura.

THICK-SKINNED ANIMALS.

Six species of *Pachydermata*, or thick-skinned animals, inhabit our forests.

ELEPHANT.

Wild elephants are numerous in the interior, and their haunts readily traced by the mutilations of the bamboos and young trees ; but they usually avoid settlements. I have often come upon them on the wild, lone banks of the Tenasserim, and have heard their blowing and heavy tramp around my booth by the head waters of Tavoy river. They seem uniformly to avoid the face of man, unless wounded by him, but an enraged elephant is a

most formidable foe, from which in an open country it is almost impossible to escape. Karens tell us that if one be wounded and not killed, he immediately retreats, but as soon as he feels the smart of his wound, he turns and rushes upon his antagonist with terrible fury. One of the best Karen marksmen I ever knew perished in this way. He shot and wounded but did not kill the elephant, which immediately ran away. His companions, knowing the habits of the animal, scattered themselves; but this man kept his ground in confidence that he would be able to reload, and renew the attack when it returned; but before his gun was loaded, the enraged elephant was upon him, and instantly trampled him to death.

Elephas indicus.

ဆင်း ဂဠု. ကမ္ပီ

WILD HOG.

Whole droves of wild hogs come down upon the Karen paddy fields, and were they not guarded night and day, they would destroy every thing before them. It is a small blackish species, exceedingly numerous.

Sus indicus,

Schinz.

Sus Scrofa,

Linne, apud Elliot.

Sus vittatus,

Schlegel.

Sus cristatus,

Wagner, apud Schinz.

ကောဝဂ်း

ခွံ့.

မီး

SINGLE-HORNED RHINOCEROS.

The common single-horned rhinoceros is very abundant. Though often seen on the uninhabited banks of large rivers, as the Tenasserim, they are fond of ranging the mountains, and I have frequently met with their wallowing places on the banks of mountain streams, two or three thousand feet above the plains. They are as fond of rolling themselves in mud as a hog, or a buffalo. The Karens when travelling have quite as much fear of a rhinoceros as they have of a tiger. When provoked, the rhinoceros, they say, pursues his enemy most unrelentingly, and with indomitable perseverance. If to escape his rage the huntsman retreats to a tree, the beast, it is said,

will take his stand beneath the tree, for three or four days in succession, without once leaving his antagonist. There are seasons when the rhinoceros is very dangerous and ferocious, attacking every thing that comes near its haunts, yet it is believed the stories related of them are exaggerated.

On one occasion while descending the upper Tenasserim on small rafts, a rhinoceros was started on the river bank, which ran down the side of the river at a buffalo gallop for about a quarter of a mile, to a ford, with which it appeared to be well acquainted, where it crossed over. Just as it reached the opposite bank, a Karen on a raft near shot at it, and apparently hit the animal, but it rushed into the jungle and was seen no more, though we encamped for the night a short distance below, on a small island that was manifestly the resort of the rhinoceros.

A gentleman in Arracan procured a single-horned rhinoceros from the Arracan jungles, and presented it to a friend in Calcutta. In the course of events it passed out of that gentleman's hands, and was ultimately sold to the Zoological Gardens for the sum of one thousand pounds sterling, where it still lives. Rhinoceros trapping, then, might prove no bad speculation.

In the Latin Vulgate the Rhinoceros is put where unicorn is read in the English Bible; and a similar rendering has been adopted in several Indian versions, though unsupported by any philological considerations. The Hebrew name *reem* bears no resemblance to the name of the rhinoceros in any of the countries adjacent to Judea. In Persian it is called *karg*.

<i>Rhinoceros unicornis</i> ,	Linn.
“ <i>indicus</i> ,	Cuvier.
“ <i>asiaticus</i> ,	Blumen.
“ <i>inermis</i> ,	Lesson.

ကွဲဆင်း မေဝံ့ဒွါး တာဒိန်ဒိန်စီးပွါး

DOUBLE-HORNED RHINOCEROS.

The double-horned rhinoceros is not uncommon in the southern provinces. It differs from the other species not in its horns only, but also in its skin, which is as

smooth as a buffalo's, while in the single-horned it is disposed in immense folds all over its neck, shoulders, haunches, and thighs; so that it looks as if harnessed in its own natural tackling; and the Karens call it the "coat of mail rhinoceros." The horns of both species are bought by the Chinese for medicine. "From the earliest times," says a recent writer, "the horn of the Indian rhinoceros has been regarded either as an antidote against poison, or as efficacious in detecting its presence, as well as useful in curing diseases;" and the Chinese seem to retain the ideas of antiquity on this subject, as they do on every other.

ကြွေရှင် မေလုံယျာ တာဒိဉ်ဗိဉ်သဘျာ

JAVANESE RHINOCEROS.

The southern Karens say there is a third species of rhinoceros in the jungles, which is distinguished from both the others by its skin being covered with small tubercles; and above all by its eating fire! Wherever it sees fire, it runs up, and devours it immediately!

I once lost my way amid the hills and valleys of Palaw and Katay; and on obtaining a Karen who lived in that region for a guide, he laid special charges on every member of the party to follow him in silence, for a fire-eating rhinoceros had been recently seen, and it always came to noises, instead of fleeing from them as most animals do. It is further described as excavating a habitation for itself on the mountain side, in which it remains during the principal part of the dry season, and wanders about during the rains. Amid the marvelous there is sufficient truth in this description to enable us to recognize it as the Javanese rhinoceros, and its supposed fire-eating propensity brings to mind a striking resemblance to the black African rhinoceros. *Rh. Africanus*. "This animal appears to be excited by the glow of a fire, towards which it rushes with fury, overturning every obstacle. It has been known to rush with such rapidity upon a military party lodged among the bush covering the banks of the Great Fish river, that before the men could be aroused, it had severely injured two of them, tossed about, and broke

several guns, and completely scattered the burning wood."

Rhinoceros Sondaicus, Cuvier.

" *javanensis*.

" *javanus*,

မြို့၊ အဝပ်မပါ၊ တာဒိန်ဒိန်မုန်ချ။

MALAY TAPIR.

The tapir has been long known to exist in the southern provinces, but has never been heard of north of the valley of Tavoy river. It has been known, however, principally from native description that the animal could be no other than the tapir. It is believed that none have ever been killed or captured in the Provinces, except one that was procured from a Karen by a writer of the late Major Macfarquhar at Tavoy. It was a very inoffensive animal, and became as much domesticated as a cat. It followed its master around the compound like a dog, but looked as unseemly as a hog. It differs in no respect from the descriptions of the Malay tapir, has the same white blanket-like appearance on its back, and like that, frequents the uplands. Though seen so rarely, the tapir is by no means uncommon in the interior of Tavoy and Mergui provinces; I have frequently come on its recent foot-marks, but it avoids the inhabited parts of the country.

Tapirus malayanus, Raffles.

" *indicus*, F. Cuvier.

" *sumatranus*, Gray.

" *bicolor*, Wagner.

တရုတ်၊ မေ့မိ၊ တာကွီ။

SOLID-HOOFED ANIMALS.

Two species of *Solidungula*, animals with undivided hoofs, have been introduced.

HORSE.

The horses of Burmah and the Shan country, which are imported into the Provinces, are small ponies, resem-

bling the little Spanish horses that run wild in Missouri, and the other western parts of America.

Equus caballus.

မြင်း။ ခဝါး ကသုဉ်း။

ASS.

Asses are said to be common at Ava, where they are introduced from the north, and a solitary specimen is occasionally seen in these Provinces.

Equus Asinus.

မြဲမြဲဉ်း။ ခဝါးဗဓု။ ကသုဉ်းယိုး။

RUMINATING ANIMALS.

Eleven species of *Ruminantia*, animals that chew the cud, are known in the Provinces; and it is not probable that any remain to be discovered.

CHEVROTAIN.

This little deer, about the size of a large hare, is often seen crossing the traveller's path in the interior; but it is by no means so abundant as at Penang, where a dozen may be obtained for a dollar. According to Linnæus, it is a species of the same genus as the musk deer, but it is not known to produce musk.

Tragulus Kanehil,

Gray : List.

Chevrotain adulte,

Buffon.

Chevrotain de Java,

"

Javan Musk,

Shaw.

Moschus Palanok,

Marsden.

Moschus Kanchil,

Raffles.

Pelandok,

Raffles,

Moschus fulviventer,

Gray.

ယုံ။ ပဝဂါ။ ဝဇံ။

BARKING DEER.

The barking deer is more abundant and more universally diffused over the Provinces than any other species. It is seen occasionally on the hill back of Maulmain, and often in the suburbs of Tavoy. It is very appropriately named, for its bleat, which is constantly heard in the jungles after night fall, is very like the barking of a dog.

It uses its horns with great effect when brought to bay, and according to a Karen fable, the tiger will not attack it. In ancient times, the story goes, when all animals had the power of speech, the tiger said to the barking deer, "O! barking deer, what is the use of thy horns? It seems to me they would be in my way." The barking deer answered: "A single push of my horns will make the eye of my antagonist start from its socket." On hearing this the tiger was afraid, and never after attempted to devour the barking deer.

<i>Stylloceros Muntjak</i> ,	H. Smith.
<i>Cervœuil des Indes</i> ,	Allamand.
<i>Cervus Muntjak</i> ,	Zimmerman, apud Horsf.
“ <i>vaginalis</i> ,	Boddaert, “
“ <i>moschatus</i> ,	Blainville, “
“ <i>subcornutus</i> ,	“ “
“ <i>moschus</i> ,	Desmarest, “
“ <i>Philippinus</i>	Ham. Smith.
“ <i>aureus</i>	“
“ <i>albipes</i> ,	Fred. Cuvier.
“ <i>Ratwa</i> ,	Hodgson.
<i>Muntjacus vaginalis</i> ,	Gray: List.
ကျွန်းရိုး ခံာ် ဟဲ့.	တကျွန်းရိုးတယ်.

HOG DEER.

This species appears to be confined to the plains. It abounds north and east of Maulmain, and on the large islands south of Tavoy; but it is not found north of the city, nor eastward among the hills, nor in the valley of the Tenasserim.

They are often hunted by persons in companies after dark, who go into the plains where they are found, beating tin kettles, and ringing bells, and gongs, which is said to bring the animals to a stand with astonishment, so that the huntsman can walk up, and shoot them at his convenience.

Cervus percinus.

ခရမ်း တယ်လွှ်း ခံာ်

RUSA DEER.

The rusa deer is the one which Europeans call elk. It is usually found among the hills, and is quite abundant in the interior.

Rusa Equina,
Cervus equinus,
 " *Rusa*,

Hamilton Smith.
 Cuvier.
 Raffles.

ဆတ်၊ ချေဗာ၊ တာမီး ထိခိန်၊

BROW-ANTLERED RUSA.

This species has not been seen south of Maulmain, but it not improbably exists in Tavoy Province, for the Karens say there are two species of rusa, and I have seen on the mountains parts of horns that appear to belong to this species. Mr. Blyth thought, from the accounts furnished him, that this was an undescribed species, but Capt. Phayre told me that he had satisfactorily identified it by its horns with the brow-antlered rusa of Assam.

Panolia acuticornis,
Cervus frontalis,
Cervus lyratus,

Gray : List?
 M'Clelland?
 Schinz? ,

ဆမင်း၊

GOAT-ANTELOPE.

The goat-antelope is confined to the mountains, and was formerly characterized as "a wild sheep, or goat." Capt. Phayre, who first obtained it in Arracan, procured two skulls and skins while here a year or two ago, by paying twenty rupees for them, and sent them to Mr. Blyth, who said they were of the same species as the specimens he had received from Arracan.

Nemorhedus sumatrensis,
Kambing utan,
Antilope sumatrensis,
Cambtan,
Antilope interscapularis

Hamilton Smith.
 Marsden.
 Pennant, apud Raffles.
 Fred. Cuvier.
 Lichtenstein, Schinz.

တောဆိတ်၊ (ရှ်၊ Arracan.) ချေဗာ၊ တာမီး၊

SHEEP.

Sheep have been introduced, but they do not thrive on this Coast. Major Macfarquhar, who formerly owned the only sheep in the province of Tavoy, during one rainy season, lost forty out of an hundred and fifty. At Maulmain they appear to do a little better, but the five or six months continued rain must always operate unfavorably to their growth in Further India.

Ovis aries.

သိုး၊ ဘဲ၊ သိုး

GOAT.

Goats thrive well, and are valuable stock in this country, both for their milk, and for the flesh of their young kids.

Capra Hircus.

သိတ်၊ ဟို၊ မိတ်သိတ်

GAUR.

This is a fine, large animal, with a bison-like appearance, a wild, fierce beast of which the natives are much afraid. It never approaches human habitations, but I once came on a large drove descending the Tenasserim, that had come down to the water for drink. They gazed a minute at the rafts, and then turned rapidly into the jungle.

Bos gaurus.

" *gour,*

Bison gaurus,

Bos aculeatus,

Bison,

Bos (Bibos) cavifrons,

" *frontalis,*

မြင်း၊ ချစ်ကပ်၊ လိပ်၊ တာဘီနား

Ham. Smith.

Trail.

Ham. Smith.

Wagler.

Low.

Hodgson, apud Elliot.

Lambert. apud Gray.

WILD OX.

A wild ox, or wild cow, as it is often called, is frequently seen in large droves all over the uninhabited regions of the Provinces. It bears a considerable resemblance to the gayal in shape, but differs from it in colour, being red

and white. At a distance a herd looks very much like a drove of English cattle. Once on coming out of a thick jungle into the open ground, I found myself in the midst of a hundred of them, and they appeared so tame, that my first impression was they were domestic cows; but they soon bounded away like deer, and dissolved the illusion. Mr. Blyth writes me that it is

Bos sondaicus.

မိငါး ဂီၤတံးမံၤ ဧကတၢၢ်မၤ-တၢၢ်တၢၢ်မၤ.

ZEBU OX.

The zebu, or Indian ox, with the large hump on its shoulders, appears to have been the most usually domesticated ox before the English took possession of the Provinces.

Bos indicus.

ဂၢၤ တၢၢ်တၢၢ်မၤ ဂီၤတံး

ENGLISH OX.

Europeans have introduced the English breed of oxen into the Provinces.

Bos taurus.

SHAN OX.

A small ox from the Shan country is brought down some times in great numbers, which resembles in its form, the English rather than the Indian ox, but is probably derived from the wild race. Occasionally a young wild ox in the Provinces is domesticated, and brought under the yoke.

Bos sondaicus ?

BUFFALO.

There are great numbers of wild buffaloes in the jungles, which are supposed by the natives to be indigenous; but they are more probably of the domestic race that have run wild, like the wild horses of America.

There is perhaps no domesticated animal in the world, concerning which learned men, in Europe and America, are so profoundly ignorant, as the buffalo. From misap-

prehension of the character of the animal, they have very generally concluded that the unicorn of the English scriptures was the buffalo. Gesenius, Hengstenburgh, and De Wette, in Germany, render the word by "der Buffel;" and Stuart, Robinson, and Noyes, in America, say buffalo. "The oriental buffalo," observes one, "appears to be so closely allied to our common ox that, without attentive examination, it might be easily mistaken for a variety of that animal." The Karens say, a sheep is "a kind of a goat;" and by a parity of reasoning, a buffalo is a kind of an ox; but in no other way. The buffalo, with its black and almost hairless skin, "huge horns," and clumsy body, affords a strong contrast to the red hairy skin, short horns and more elegant appearance of the common ox.

Barnes says, it is "an animal which differs from the American buffalo only in the shape of the horns and the absence of the dewlap." It is well known that the American buffalo is not a buffalo, but a bison, and the two differ from each other much more than either from the common ox; and according to modern naturalists, the difference between them is not merely specific, but generic—the buffaloes forming one genus, and the bisons another. According to Swainson, the buffaloes have "a small dewlap on the breast," but they differ from the bisons among other things in having "no hunch on the back," no very "long hair under the jaw and throat," and no mane upon the shoulders. The buffalo too, has one pair of ribs less than the bison, and is altogether a widely different animal.

Barnes remarks again of the buffalo, that it "has been recently domesticated;" but in the laws of Menoo, the great Hindu legislator, who is supposed to have written about the time of David, domesticated buffaloes are often mentioned. It would appear that in his days, they were used to draw carts; for in one place he says: "If a man shall be driving a cart, and his bullocks or buffaloes start and run against a house, he shall not be held in fault. If he run against the steps, let him put up new ones. If he run against the balustrades, let him replace them; there is no

W*

fine. If the cart shall not run against the house, but the bullocks, the buffaloes, the yoke, or other things belonging to the cart, there is no fine, nor if a plough shall run against a house."

Bubalus Arnee,

Hamilton Smith.

Bos indicus,

Plinius.

" *bubalus*,

Brisson, Linn.

Bubalus ferus indicus,

Hodgson, apud Gray : List.

" *Buffelus*,

Gray : List.

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ဝ၇၅.

ဝနိ

WHALE TRIBE.

Two species of *Cetacea*, animals of the whale family, are found on our coasts.

PORPOISE.

A species of porpoise is very abundant along our shores, and in the rivers, occasionally, as high as tide-waters reach. It is probably the same porpoise as the one in the Malay waters, for that species extends to the Malabar coast.

Delphinus plumbeus,

Dussumier.

" *malayanus*,

Lesson.

သဒိုင်း ဗၢၣ်ဝံၣ်ခွံၣ်-ဗၢၣ်တၢ်မၤ

ညၢ်တၢ်ခိၣ် ညၢ်တၢ်ခွံၣ်

WHALE.

The whale is found south of Mergui, and Capt. Lloyd named a bay a few miles south of the parallel of 12° N. "Whale Bay"—from the circumstance, he says, "of its being resorted to by numerous whales, and its being the only part of the coast where I have seen them."

Balæna?

Balænoptera?

ORNITHOLOGY.

“The *dodo* may possibly be found there—and the *cassowary* may perhaps be met with,” observed Dr. Pearson in his official charge to Dr. Helfer, when the latter was about to proceed on his scientific mission to these Provinces. The *dodo* and *cassowary* were about as probably inhabitants of this Coast, as the *phoenix* and *ostrich*; but the remark shows how little was known of our ornithology a dozen years ago. Indeed it remained quite a blank until Mr. Blyth was appointed Curator of the Asiatic Society’s Museum. He examined and named the collections made by Helfer and others in these Provinces, and those gathered by Captains Phayre and Abbott in Arracan, so that by far the greater proportion of our birds are now known. Still, there undoubtedly remain many new species to be discovered; for of ten birds that frequented my compound in Maulmain, one proved to be a new species.

RAPACIOUS BIRDS.

The *Raptores*, or rapacious birds, are numerous represented in these Provinces. We have about thirty species of vultures, eagles, kites, buzzards, harriers, falcons, hawks, goshawks, fish-hawks, and owls.

CHINESE VULTURE.

The Chinese vulture, of a brownish black colour, is often seen in great numbers, even in the suburbs of our largest towns.

Vulture leuconotus.

လင်းတံး လူနွဲလဲ လီတံး

PONDICHERY VULTURE.

This is called by the natives the red-headed vulture, from the flesh-coloured skin on the sides of its head and neck. It is not so abundant as the preceding species.

Vulture pondicerianus.

လင်းတံး လူနွဲလော့သံ့ လီတံးဂီၤမိၤ

A white vulture with a little black on the wings is designated in the Hebrew Scriptures, where gier-eagle is read in the English version; and the word rendered vulture in Job, is more correctly translated in Leviticus and Deuteronomy by kite. It was probably a generic term like the Burman *zune*,* embracing several species of falcons and kites. In Persian the kestrel is called *yuh*, no doubt a word of common origin with the Hebrew name *ayah*.

OSPREY.

The common osprey, or fisher-eagle, is often seen on the sea-coast. The Karen name of this bird at Tavoy, is, at Maulmain, applied to a large owl.

Pandion haliaetus.

ဝဲလတ်၊ လိုဇော့၊ လိတ်တို၊ (Tavoy.)

EAGLE.

Eagles are in the interior only, and they soar so high, that they are not often noticed by travellers in the deep forest. The Karens describe two or three different species. One, they call the peacock-eagle, from its habit of selecting peacocks for its prey. The Burmese appear to have only one name for three species.

Aquila bifasciata,

(Arracan.)

ဝဲလိ၊ လိုဇော့၊ လိုဇော့၊

လိတ်ကြိတ်

လိုဇော့၊

လိတ်ထိပ်

လိုဇော့၊

လိတ်တို

လိတ်

KITES.

The common Bengal kite abounds in the neighborhood of Maulmain.

Milvus ater,

ခွန်

လိုဇော့၊

လိတ်

BUZZARDS.

Blyth says that "the smallest species of the true buzzard" inhabits the Tenasserim Provinces.

Buteo pygmaeus.

ခွန်

လိုဇော့၊

လိတ်

* ခွန်

HARRIER.

A black and white bird of the buzzard tribe, a species of harrier, is not uncommon.

Circus melanoleucos,

သိန်းကြား။ လုံဟေဝှာ့။ သံစားခါမြူး။

THE KESTREL.

The kestrel of Europe is an inhabitant both of these Provinces and Arracan.

Falco tinninculus.

ရှိုးသိန်း။ လုံသော့။ လုံလုံကိ။ သံပိန်တူး။ သံလီခူး။

SMALL FALCON.

A small falcon is found in Arracan, which I have not met with in these Provinces.

Terax Bengalensis.

ဒေါင်းဦးနောက်။

HAWK.

A common hawk in Maulmain, of which I sent a specimen to Mr. Blyth, is,

Nisaster badius,

Accipiter Dussumieri.

သိမ်း (သိမ်းကြိတ်မ။ Arracan.) လုံသော့။ သံထူး။

TEESA HAWK.

Mr. O'Riley sent a teesa hawk from Amherst, of which, Mr. Blyth remarked : " It seems to be

Poliornis faciatus, Lord Hay.

" teesa ?"

GOSHAWK.

A crested goshawk was shot by Mr. Barbe at Yay, and doubtlessly exists in other parts of the Provinces.

Astur trivirgatus.

" indicus,

Hodg.

" palumbarius,

Jerd.

FISHER-HAWK.

There are three or four different species of fisher-hawks in the Provinces, but I am unable to distinguish the species. Capt. Phayre found two in Arracan.

Haliæetus Macei, (Arracan.)

" *blagrus*, "

ဝံလက် အင်ကြီး၊ လုံဗျေဝေ-လုံဗျေဝေ၊

လံာ်ဒါ၊ လံာ်ထီးထံ၊ လံာ်ကီုဒီး၊

BRAHMINÉE-KITE.

A white headed fish-hawk, which I judge to be the Brahminee-kite of Hindustan, abounds at Tavoy.

Haliætus pondicerianus.

စွန်ခေါင်ဖြူ၊ လုံဒွေဝံ၊ လံာ်ဝါဒိန်၊

WHITE-BANDED FALCON.

A small bird of the falcon tribe, with a band of white around its neck, but black on the head and back, is seen in the Tavoy forests.

လုံဒွေဝံ၊ လံာ်ကျီုကိန်၊

SMALL HAWK.

A diminutive hawk, the smallest of the tribe, grey on the back and white on the head, is common at Tavoy, that the Burmans call *doung-sune*, a name which in Arracan is given to a large kite, *Hæmatornus undulatus*, or *falco bido*; while the small hawk there has a different name.

ခေါင်စွန်၊ လုံကျေဝံ၊ လံာ်မိ၊

SMALL REDDISH HAWK.

A small hawk of a reddish colour is met with occasionally in the Karen jungles.

လုံဗျေဝေ၊ လံာ်မိ၊

LONG-TAILED HAWK.

A bird about the size of a crow, resembling a hawk, with bands of white and black on its long tail, is found in the interior.

လုံဗျေဝေ၊ လံာ်မိးစဗိန်၊

SPARROW-HAWK.

A hawk with a forked tail, like the sparrow-hawk, is not rare.

လိလော့ဟျံ့ဟျံ့. ထိပ်သဉ္ဇန်ခိုး

BARN OWL.

The common English barn owl is perhaps more abundant in these Provinces than in Great Britain.

Strix flammea.

ငှက်ဆိုး ခပ်ပဝဂ္ဂ. မိကအိ.

COMMON OWL.

Capt. Abbott furnished Mr. Blyth with an ordinary sized owl from Ramree, of the same genus as the barn owl, which I think inhabits these Provinces.

Strix badia.

ခင်ပုတ် ပဝဂ္ဂ. မိကအိ ?

HORNED OWL.

This is a large horned owl which the Karens say is sometimes as large as a hornbill. The cuckoo of Leviticus in our English version, is supposed to be a species of horned owl.

Bubo macrocephala.

ထီးထုတ် ခပ်ပဝဂ္ဂမဟ်. မိကအိခိုးမိန်. ထိပ်မိရှ်လှ်.

NAKED-LEGGED OWL.

A large horned owl, with naked legs, often lifts up its mournful voice at midnight even in towns. Karens call the horned owl, *mookaulaing*, or the devil, and seem to look upon its large goggle eyes with the same sort of reverential horror, that the Western Indians do the Virginia horned owl. Like the ancient Romans too, its appearance in a town or hamlet is regarded as the harbinger of evil. Nor is this strange, for they send forth such deep muffled sounds as heard in the dark still night, seem like tones from a charnel house.

Ketupa Leschenaultii,

Lesson.

Strix Hardwickii,

Gray.

ထီးထုတ် ခပ်ပဝဂ္ဂမဟ်ခေါ်ဒဂ်ခါ. မိကအိခိုးမိန်.

SCOPS OWL.

A small owl of the genus *scops* Mr. Blyth says inhabits Arracan, and, may not improbably be found in these Provinces.

Scops lettia.

မြဲကွက်.

ATHENE OWL.

Two different species of small owls, belonging to the genus *athene*, inhabit the Provinces. The first is of a more uniform rufous colour than the other members of the tribe.

Athene castanopterus.

" *cuculoides.*

Noctua

မြဲကွက်.

ဘုံပဝဃယံ.

မြဲကွက်.

TOOTH-BILLED BIRDS.

Of the *Dentirostres*, birds with a notch in the bill, the Provinces furnish numerous species of shrikes, bulbouls, thrushes, babblers, orioles, stonechats, warblers, wagtails, fruit-eaters, fly-catchers, and broad-bills.

WHITE-BELLIED SHRIKE.

This is a new species of shrike, of which I sent Mr. Blyth his only specimen. He describes it as "very closely allied to *L. Hardwickii*, Vigors; from which it differs—1, in having the entire crown nigrescent, passing gradually from the black of the forehead to dark ashy on the nape; the ear-coverts being uniformly coloured with the feathers superiorly adjacent:—2, in having the rump and upper tail-coverts of the same deep maroon colour as the back and scapularies:—3, in the much greater development of the ferruginous margins of the great wing-coverts and tertiaries:—and 4, in having the under-parts uniformly white, a little subdued, and tinged with a very faint blush, but having no trace of rufous on the flanks and elsewhere."

Lanius hypoleucos,

Blyth.

RED-HEADED SHRIKE.

A brown shrike with a reddish head is common throughout the Provinces.

<i>Lanius phœnicurus,</i>	Pallas.
" <i>cristatus,</i>	Linneus.
" <i>rutilus,</i>	Latham.
" <i>superciliosus,</i>	"
" <i>melanotis,</i>	Valenciennes.
" <i>ferrugiceps,</i>	Hodgson.

TIGER SHRIKE.

Mr. Blyth mentions the tiger shrike as being found on this Coast.

<i>Lanius tigrinus.</i>	
" <i>magnirostris,</i>	Lesson.
" <i>strigatus,</i>	Eyton.

PEGU SHRIKE.

Another shrike is described in Belanger's voyage from Pegu.

Lanius collurioides.

INDIAN SHRIKE.

This shrike has a black head, and though received by Mr. Blyth from Arracan only, I think I have seen it in these Provinces.

<i>Lanius nigriceps,</i>	Franklin.
" <i>nasutus,</i>	Scopoli.
" <i>antiguanus,</i>	Latham.
" <i>tricolor,</i>	Hodgson.

GREY-BACKED SHRIKE.

A grey shrike is common in Arracan of the same size as the preceding, but differing in colour.

<i>Lanius tephronotus,</i>	Vigors.
" <i>nipalensis,</i>	Hodgson.

RED-BACKED SHRIKE.

A small shrike with a rufous back is also found in Arracan.

<i>Lanius caniceps,</i>	Blyth.
" <i>erythronotus,</i>	Jerdon.

DRONGO SHRIKE.

A species of drongo shrike inhabits Arracan, and perhaps these Provinces.

Tephrodornis pelvica.

Tenthaca " Hodgson.

PARADISE EDOLIUS.

The loud, flute-toned edolius might be termed the Tenasserim nightingale, for it is considered by the Karens as the sweetest singer of their forests, and it seems to delight in cheering them at eventide. There was an old friend that used to come at sunset every evening, and perch upon a guava bough near my dwelling in Dong-yan; and there it would sit and pour forth one incessant stream of melody for a half hour at a time. This bird has a glossy, jet black dress, with two remarkably long shafts to its tail-feathers, "broadly barbed on the inner side towards the extremity; the stem however, giving one twist, so that the inner part appears to be the outer one."

Edolius paradiseus.

" *retifer*, Temm.

" *cristatellus*, Blyth.

" *intermedius*, Lesson.

Dicrurus platurus, Vieillot.

Cuculus paradiseus, Linn.

ငှက်တော်" ခပ်အူရံ. ထိန်ချိုင်း

MALABAR EDOLIUS.

A second species from the Provinces is thus distinguished: "In this species, the frontal plumes attain a length of two inches and a half, and flow backward over and beyond the occiput. The hackles of the neck are also decidedly more elongated than in the others."

Chibia malabaroides, Hodgson.

Edolius "

" *grandis*, Blyth.

Lanius malabaricus, Latham, not Sonnerat.

ARRACAN EDOLIUS.

Capt. Phayre found another species of edolius in Arra-

can, called by the same Burmese name, which I have not met with in these Provinces. It has the long tail feathers of the preceding species, but the stem takes only half a turn, so that "the barbed tips remain vertical to the axis of the body."

<i>Bhringa remifer</i> ,	Temm.
" <i>tectirostris</i> ,	Hodgson.
<i>Edolius rangonensis</i> ,	Horsfield.
<i>Edolius remifer</i> .	

LARGE-CRESTED EDOLIUS.

Mr. Blyth mentions another species from Arracan, distinguished by its crest-feathers attaining to an inch and a half in length.

<i>Edolius grandis</i>	Gould.
" <i>bengalensis</i> ,	Hay.

KING CROW.

The king crow is a small black bird, resembling the preceding, but without the tail feathers. It derives its English name from its bravery in chasing away the crows. Both the Burmese and Karens often call the edolius by the same name that they do this bird. A specimen that I sent Mr. Blyth, he wrote was

<i>Dicrurus macrocerus</i> .	Vieillot.
" <i>indicus</i> ,	Hodg. Stevens.
" <i>forficatus</i> ,	Horsfield.
" <i>pingah</i> ,	Blyth.
" <i>balicassius</i> ,	Sykes, Jerdon.
<i>Bhuchanga albirictus</i> ,	Hodg.
ငှက်တော်၊ ခပ်တိုချွတ်၊ ခပ်တိုခဏ၊ ထိပ်ခပ်ကွေ့၊	

SMALL KING CROW.

There is also a smaller species of king crow in the Provinces.

<i>Dicrurus intermedius</i> ,	Blyth.
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ARRACAN KING CROW.

Arracan has another king crow with "its outermost tail feathers very much twisted over, forming a singular ornament."

<i>Edolius barbatus</i>	Gray.
<i>Chibia hottentota</i> ,	Hodg.
" <i>casia</i> ,	"
<i>Corvus hottentotus</i> ,	Linn.
<i>Edolius crishna</i> ,	Gould.
<i>Criniger splendens</i> ,	Tickell.

ROSY-RED BIRD.

The male red bird is a beautiful little creature, with a black head, and is usually seen in company with the female, which has yellow on her feathers wherever the male has red.

Pericrocotus roseus,
Phœnicornis "
Muscicapa "

ငှက်မင်းသား။ ငှက်မင်းသမီး။ ဟိယူဟိယူ။ ဆိန်ဘူး။

PINK-EARED BULBOUL.

Bulbouls, so often celebrated in Persian and Hindu poetry, are numerous on this Coast. The pink-eared bulboul is one of the most common birds in the Provinces, especially in the neighborhood of Tavoy. It is crested like the American cedar bird, which it resembles in habit, for it is an inveterate fruit eater, but has a little crimson tuft over the eye, from which it derives its specific name. Large flocks tenant the shrubbery in the suburbs of Tavoy, and may be seen coming into town early every morning in little armies; and whatever garden contains a berry-bearing tree, is sure to be the residence throughout many hours of the day of a few pink-eared bulbouls.

Pycnonotus jocosus*.
Gracula cristata, Scopoli.
Lanius emeria, Shaw.
 ဂုတ်မင်းနီ (Arracan.) ဂုတ်ဆီကူ (Tavoy.)
 ခပ်ပဲခပ်ပဲခပ်။ ဘိသလိ။

* This genus includes Swainson's *Hematernis*.

BLACK-EARED BULBOUL.

There is another bulboul here with the head wholly black, but crimson under the tail, like the preceding species. The natives do not distinguish them,
Pycnonotus atricapillus?

YELLOW AND GREEN BULBOUL.

This is a very common bird in Maulmain, and in the dry season its musical, though little varied notes, are often heard. It is rarely seen in Tavoy.

Pycnonotus Finlaysoni.

ပုတ်ဝါး၊ ခပ်သားပုတ်ဝါး၊ ဝိဇ္ဇာသိဒ္ဓိ၊

YELLOW BULBOUL.

The yellow bulboul differs very slightly in its general appearance from the preceding. Mr. Blyth received it from Arracan, but I believe it also frequents our groves.

Pycnonotus flavescens.

ပုတ်ဝါး၊ ခပ်သားပုတ်ဝါး၊ ဝိဇ္ဇာသိဒ္ဓိ၊

BROWN-BREASTED BULBOUL.

A bulboul, nearly related to the pink-eared species, but with a brown breast, inhabits the Provinces.

Pycnonotus nigropileus, Blyth.

AMHERST BULBOUL.

A bulboul, from Amherst, is said to be a representative of the Arracan

Pycnonotus hæmorrhous.

BLACK-CRESTED BULBOUL.

Another bulboul has a black-crested head with a yellow body, found in Arracan by Capt. Phayre.

Pycnonotus melanocepalus.

ပုတ်ဝါးမောက်ဘင်း၊

GREEN BULBOUL.

Three different species of green bulbouls are described from Arracan, one or more of which I have noticed

၃*

in these Provinces. They are green, with a little blue on the breast, and wing.

Phyllornis cochinchinensis.*

" *malabaricus.*

Phyllornis aurifrons.

၄၈၆၆။

Phyllornis Hardwickii.

Chloropsis curvirostus, Swainson.

" *cyanopterus,* Hodgson.

" *chryso-gaster,* Horsfield.

" *auriventris,* Gmelin.

၆၆၆၆၆၆။

BLACK-HEADED BULBOUL.

This bird has a black but crestless head, with a yellow body, common in Arracan.

Brachypodius melanocephalus, Gmelin.

Turdoides atriceps, Temminck.

၇၆၆၆။

OGHRE-HEADED BULBOUL.

The ochre-headed bulbul is occasionally seen in these Provinces, and Mr Blyth remarks that it is " a favorite cage bird with the Malays."

Criniger ochrocephalus, Gmelin.

Tricophorus crispiceps, Blyth.

YELLOW-BELLIED BULBOUL.

Another bulboul is mentioned from Arracan, allied to a yellow bellied African species.

Criniger flaveolus.

CROWN-FEATHER-POINTED BULBOUL.

This also is an Arracan bulboul that may be found on this Coast.

Hypsipetes psaroides.

BLACK BULBOUL.

A bulboul with a black head and back resembling the preceding species inhabits the Provinces. "It resembles," says Blyth, *H. psaroides* and *H. nilgiriensis* ; but is

* *Chloropsis,* Jardine, Selby, Swainson and Jerdon.

altogether blacker, the black of the crown forming thus no contrast with that of the rest of the upper-parts : lower-parts, and rump dusk-cinereous, and slight edgings of the same to the alars and caudals : upper tail-coverts black."

Hypsipetes

Blyth.

ASHY BULBOUL.

Another bulboul from Arracan is of an ash colour.

Hemizas flava,

Blyth.

RED-HEADED BULBOUL.

This is a small ferruginous bird of Arracan, that Mr. Blyth appends to the bulbouls, but of an uncertain group.

Heteromorpha ruficeps.

BLUE ANT-THRUSH.

As in England and America, the thrushes of India are among the sweetest songsters. Two distinct species of blue ant-thrush enliven the woods and dales of Tenasserim, and a third is found in Arracan. Our ant thrushes are splendid green birds, with crimson crowns and blue mantles, with sometimes shades of green on the breast.

Pitta Malaccensis.

Brachyurus cyanopterus,

Temm.

Pitta cyanea.

Paludciola nipalensis, (Arracan) Hodg.

မြန်မာ၊ မြန်မာ၊ ဘုံ၊ ဟုံ၊ ဟုံ၊ ထိုင်း၊

GREEN AND RED ANT-THRUSH.

This is a fine little bird with scarlet wings, and a green robe, but when exposed to the light, Mr. Blyth says the green turns to blue, and the red to a dull ash colour, and that " it combines in its manners the traits of the jay and shrike."

Cissa venatorius*.

THRUSH.

A thrush with " upper parts greenish olive-brown," and white on the belly, is found from Arracan to the straits of Malacca.

Turdus rufulus,
" *modestus*,

Drapier.
Eyton.

* *Corapica*,
Chlorisoma,

Lesson.
Swainson.

OLIVE THRUSH.

A thrush with upper parts dull olive, and under parts light rufescent, is described from Arracan.

<i>Geocichla citrina</i> ,	Lath.
<i>Turdus Macei</i> ,	Vieillot.
" <i>lividus</i> ,	Tickell.
" <i>rubecula</i> ,	Horsfield.

ZOOTHERA THRUSH.

Specimens of this thrush have been furnished from Arracan. It has a large bill, olive-brown in its whole upper parts, with an intermixture of white on the under parts. "The plumage of the nestling much resembles the garb of an English blackbird."

Zoothera marginata.

BLACK THRUSH.

Dr. Griffith met with a thrush north of Ava, with the back slaty-black, breast deep black, and belly dull white.

Merula leucogaster.

ROCK-THRUSH.

A species of rock-thrush, blue with rufous on the lower parts, is common both in these Provinces and in Arracan. The natives do not appear to distinguish it from the ant-thrush.

Petrocincla affinis.

BABBLER.

A small bird, remarkable for its chattering, is often seen in flocks near Tavoy. It belongs to the babblers.

Garrulax Belangeri*.

ဝဇုင်းငှက်၊ ဗိုလ် ဗဟို ဒွါ ခပ်၊ ထိပ်ထူ၀၇၆၆

Two other species of babblers have been found in Arracan.

Garrulax, leucolophos.

" *moniligcr*.

* *Crateropus*,
Ianthocincla,
Cinclaesoma,

Swainson.
Gould.
Vigors, Hodgson in part.

BANDLESS BABBLER.

Another species of babbler inhabits the Provinces, that is "remarkable" "for the very slight development of the black, pectoral band, which in one is indeed wanting altogether."

Garrulax pectoralis.

ABBOTT'S BABBLER.

This bird was found by Capt. Abbott in Arracan, and being regarded by Mr. Blyth as the type of a new genus related to the babblers, he named it

Malacocincla Abbotti.

IORA BABELER.

Another Arracan bird belonging to the genus iora is classed with the babblers.

Iora typhia.

Motacilla typhia.

Linn.

FAN-TAILED BABBLER.

A pretty bird, with a fan-tail, related to the babblers, is very common in the province of Tavoy.

Pomatorhinus olivaceous.

သွေးရှည်

ဘိပ်ပွား

ထိပ်ဘွားနီ

PHAYRE'S POMATORHINUS.

There is another species of pomatorhinus in Arracan, "having the crown of the same olivaceous hue as the rest of the upper-parts, this being of a greener tinge than in the Darjeeling birds; the feathers above the lores short and white, like the rest of the supercilium; and the rufous of the under-parts is much weaker and more fulvescent."

Pomatorhinus Phayrei.

TIMALIA BABBLER.

A babbler belonging to the genus timalia, is an inhabitant of the Provinces.

Timalia gularis.

MANGO BIRD.

The mango bird, or black-headed oriole, famous in Indian poesy, is one of the most numerous of Tenasserim songsters; it comes to our gardens at early dawn, when its rich mellow notes are heard pealing far through the mango bowers. It is a large yellow bird, with a black head, easily recognized.

Oriolus melanocephalus.

ငှက်ဝါး ဘိယံ့ ထိန်ဘီသီ။

INDIAN ORIOLE.

This is another mango bird, found in the Provinces, differing slightly from the preceding, and for which the natives have no name to distinguish it from the other, though they are aware of the existence of the two species.

Oriolus indicus.

IRENA.

The irena is a bird of the oriole tribe, an inhabitant of Arracan, with a black breast and blue back.

Irena puella.

ငှက်ပျားစင်။

STONECHAT.

A species of stonechat tenants the jungles of Arracan, and is probably in these Provinces; but I am not quite certain that I have identified it.

Saxicola caprata.

လယ်ခြား။

WHITE-EYED WARBLER.

A small bird which Mr. Blyth refers to the honey-suckers, but which Swainson calls the white-eyed warbler, inhabits our jungles.

Zosterops palpebrosus.

TAILOR BIRD.

Tailor birds are very common at Tavoy, though rare at Maulmain; and they frequently adorned my garden with their curious pendulous nests. One, selected the living

leaves of the mulberry tree, which it sewed very cleverly ; another, the large leaves of a Malay apple tree, and both sewed their nests in sheltered recesses, where they were in a great measure shielded from the rains.

Orthotomus longicaudata.

Motacilla " Gmelin.

" *sutoria.*

Orthotomus sphenurus, Swainson.

Sylvia ruficapilla, Hutton.

မြိုင်တိုက် ဂျာဗီယံ၊ သီဆူဗြီဇီ၊

WARBLER.

A small bird belonging to the warblers, with the general form of the tailor bird, is very common in Tavoy shrubbery, but is seldom seen in Amherst Province. It has the same native name as the tailor bird, and is probably one of the six species of *phylloscopus* which have been discovered in Arracan.

Phylloscopus fuscatus, Blyth.

" *magnirostris,* "

" *javanicus,* Horsf.

" *viridanus,* "

" *brunneus,* "

" *schisticeps,* Hodgson.

" *modestus,* Gould.

ETHERIAL WARBLER.

Mr. Blyth mentions this bird as inhabiting the Tenasserim Provinces. He says it is " the etherial warbler of Latham, and the female agrees with the supposed female of his blue Indian warbler.

Cyornis rubeculoides, Blyth.

Niltava brevipes, "

ARRACAN CREEPER.

Two small birds from Arracan are by some considered as belonging to genera which Mr. Hodgson associates with the creepers.

Stachyris chrysæa, Hodgson.

Erpornis zantholeuca, "

WAGTAIL.

A species of wagtail is often seen in company with cattle, "following them and gathering the insects that are beaten up by the beasts' foot." It is common in the Provinces, though I am not certain of the species, but the one Capt. Phayre found in Arracan was

Budytes leuma.

မြီးငေါက်၊မြီးညောင်။

WATER-WAGTAIL.

A water-wagtail bearing considerable resemblance to the European bird, is abundant in the neighborhood of Maulmain. It heralds in the dry season, always leaving the Coast in the rains, and returning again at their close.

Motacilla luzoniensis.

သမိတ်ထွယ်၊ ဘုံ၂ တံ၂ မံ၂၊ ထိန်ဒေသ်၊

ENICURUS.

Capt. Phayre met with two species of enicurus in Arracan, birds belonging to the wagtail family; and one other species is found in these Provinces.

Enicurus schistaceus, (Tenass.)

" *maculatus,* (Arr.)

" *immaculatus.* "

ဝမ်ရင်ကျား။

TREE PIPIT.

A bird has been described from these Provinces whose habits approach those of the tree pipits, but it is also related to the wagtails.

Nemoricola indica.

Motacilla. "

ရဟတ်။ (Arracan.)

RICHARD'S PIPIT.

This is a small bird found in Arracan, identical with a pipit occasionally seen in England.

Corydalla, Richardi.*

Anthus, "

* *Agrodroma.*

Swainson.

SLENDER LARK.

This bird is called the slender lark by Latham, but is classed with the pipits by Blyth, who says it is found in the countries eastward of the Bay of Bengal, down to the Straits of Malacca.

Corydalla rufula.

Anthus rufulus.

ထိန်လီဝဲဒ်

BROWN-WINGED CHATTERER.

A bird belonging to the group of chatterers, with brown wings, has been described from the Provinces.

Soropus nipalensis.

Siva

PARADISE FLY-CATCHER.

This is a handsome, crested, black-headed bird, with chestnut back and wings, and a very long tail of the same colour, a few of the tail feathers being prolonged much beyond the others. It is quite common throughout the Provinces, but is rarely seen in the neighborhood of large towns.

Muscicapa paradisi.

ဘုံဘု. ထိန်ဆီခါ

PURPLE FLY-CATCHER.

A purple fly-catcher was found by Capt. Phayre in Arracan.

Muscicapa caerulea.

ဝတ်တု

SMALL FLY-CATCHER.

A smaller fly-catcher was also discovered in Arracan.

Rhipidura fuscoventris.

ထိန်ကား

FLY-CATCHER.

Mr. Blyth mentions a fly-catcher from Arracan which he called

Muscicapula melanoleuca.

Y

BROAD-BILL.

Four species of manakins, or broad bills, birds with a short and excessively broad bill, inhabit the Provinces, and Capt. Phayre met with a fifth species in Arracan.

Eurylaimus javanicus.

Cymbirhynchos nasutus.

" *affinis*, (Arracan.)

Serilophus lunatus.

Corydon sumatranus.

ငှက်ဆတ် (Arracan.)

CONIC-BILLED BIRDS.

The *Conirostres*, or conic-billed birds, form a numerous class of crows, pies, mynahs, starlings, finches, sparrows, buntings, larks, and hornbills.

CROW.

Three different crows are seen on the east side of the Bay of Bengal, and all differ from the common European and American crows. The "common India crow, sometimes mistaken for the jackdaw," is seen from Calcutta to Akyab; southward through the Provinces to Malacca, the "common India black crow, often erroneously termed raven," abounds; and in the Straits of Malacca, and I think in the Karen forests, the large-billed crow is common.

Corvus splendens,

" *culminatus,*

" *macrorhynchus,*

" *corone,*

" *americanus,*

ကျီးကန်း

ချမှ.

Common India crow.

Common India black crow.

Large-billed crow.

European "

American "

မီးဝဉ်း

BLUE MAGPIE.

Mr Blyth had a species of blue magpie, which he says inhabits the mountains between Arracan and Pegu.

Psilorhynchus magirostris,

Pica,

Blyth.

Vigors and Gmelin.

WANDERING PIE.

This is a handsome bird with a long tail, the feathers of which are tipped with black, while the back is of a cinnamon colour. The Karens call it the tiger-king crow, but naturalists class it with the wattle crows, and Wagler places it in the same genus as the magpie.

Crypsirina vagabunda.

Coracias

ဝံ့ၤ ချံၤ ဝါး.

ထိန်ချဉ်း

THE SATIN CROW, OR BENTEOT.

The benteot is a species of the same genus as the preceding, and has the same vernacular names. Mr. Blyth wrote of a specimen that I sent him: "A bird which I have only seen from Tenasserim and Java—never from the Malay Peninsula." It is quite common in the neighborhood of Maulmain, and its rarity in India makes it worthy of special attention to collectors.

Crypsirina varians,*

Vieillot.

Phrenotrix temia,

Hors.

ဝံ့ၤ ချံၤ ဝါး.

ထိန်ချဉ်း.

TALKING MYNAH.

This is the black mynah, with a yellow head-band, so often seen in cages in this country, and which learns to talk as readily as a parrot.

Gracula religiosa.

သာလိကာ.

ဝံ့ၤၤ ချံၤ ဝါး.

ကျာ်းခါး.

PIED STARLING.

The pied starling abounds in the compounds and fields of Tavoy, and is often seen perched upon the back of the buffalo gathering insects.

Sturnus contra.

ဇေက်ချေးဝါး.

ဝံ့ၤၤ ချံၤ ဝါး.

ကျာ်းခါး.

SUB-CRESTED MYNAH.

This mynah is as numerous at Maulmain as the pied starling at Tavoy. They build their nests in the hollows

* *Dendrocitta,*

Gould.

of trees near human habitations, and their clear full notes are constantly heard in our compounds.

Acridotheres cristatellus, Blyth.

Gracula cristatella. Lin.

ဇေက်ကြီး၊ ဘုံ၊ ဂျီ၊ ဖေ၊ ဆီရင်စေးခိုင်။

WHITE-HEADED MYNAH.

Another common mynah at Maulmain of which I sent a specimen to the Asiatic Society's museum is

Sturnia malabarica, Blyth.

Pastor malabaricus, Jerdon.

ဇေက်၊ ဘုံ၊ ဂျီ၊ ခွာ၊ ဆီရင်ဝါခိုင်။

BLACK MYNAH.

A species of black mynah is occasionally seen in the interior.

Pastor tristis?

ဇေက်၊ ဘုံ၊ ဂျီ၊ ဓေ၊ ထိန်ကျီး။

BANK MYNAH.

The bank mynah, a species that builds its nests on the banks of streams, is said to be an inhabitant of the Tenasserim Provinces.

Acridotheres ginginianus.

Turdus " Latham.

CRESTED MYNAH.

This mynah is distinguished by a small crest, but it is not common in these Provinces.

Acridotheres griseus, Horsfield.

Pastor cristalloides, Hodgs.

ဇေက်မောက်တင်။

YELLOW-BARRED MYNAH.

Mr. Barbe found a pretty mynah in the Yay forests, with a yellow neck, and yellow bars on the feathers.

Ampeliceps coronatus.

CALORNIS MYNAH.

Mr. Blyth describes a species of mynah from this Coast belonging to the genus *calornis*; and mentions another starling.

Calornis cantor.

Sterna poliocerca.

YELLOW-CAPPED WEAVER BIRD.

A small finch or sparrow, with a yellow head, is very common in Tavoy. It is remarkable for building pensile nests, suspended to the branches of trees. The tall mango trees are usually selected, but I have had their nests in my garden on citron trees.

Euplectes Philipensis.

စာပေါင်းတွက်။

(စာပေါင်းတောင်း၊* စာပေါင်းသောင်း၊ *Tav. Arr.*)

BLACK-HEADED FINCH.

A blacked headed finch belonging to Swainson's genus *amadina* is found both in these Provinces and Arracan.

Munia rubroniger.

CHINESE SPARROW.

A species of *amadina*, or grosbeak, called the Chinese-sparrow, is mentioned as an inhabitant of Arracan.

Amadina Sinensis.

FIELD SPARROW.

A small bird sometimes called a field sparrow, is not uncommon.

Amadina striata.

Loria stria'a,

Latham.

Fringilla leuconota,

Temm.

INDIAN SPARROW.

The common sparrow of the Provinces so nearly resembles the European sparrow, that Mr. Blyth originally considered it the same, but he has latterly allowed it to be a distinct species.

Passer indicus.

* ဂုတ် is a Tavoyism here, and on pages 260--262 for the Burman ဂုတ်။

† *Pyrgita,*

Swainson.

MOUNTAIN SPARROW.

This is another European sparrow which Capt. Abbott found on the Island of Ramree. It is the common sparrow in Chusan.

Passer montanus.

YELLOW SPARROW.

A yellowish sparrow found in Arracan, is described as

Passer flaveolus.

BUNTING.

A bunting, or ortalan, inhabits the Provinces. "It differs from *Eu. aureola* of Siberia in having no black on the chin and throat, in the well defined yellow supercilium, and in having the ear-coverts intermixed with yellow or grey."

Euspisa flavogularis,

Blyth.

Emberiza aureola.

SKY LARK.

Mr. Blyth describes a lark from Arracan which he says "Very closely resembles the British sky lark in its song and habits." If such a bird inhabits these Provinces it has quite escaped my notice.

Alauda gulgula.

CONCAVE HORNBILL.

The hornbills are among the most remarkable birds of India. Their flight is elevated and rapid, and the sound of their wings as they sweep through the air is like the rush of an approaching tempest. There are four species in these Provinces, all with bills of an enormous size, and one with a high concave cask. These birds are celebrated in Karen poetry for their conjugal affection. Their nests are constructed in a superior manner of clay in the stumps or hollows of old trees. After the female has laid five or six eggs, the male bird shuts her entirely in with mud, except a small orifice where she can only peep out her head. Here she must sit during her incubation, for if she breaks through the inclosure her life pays the forfeit; but to compensate for the loss of freedom, her

spirited mate is ever on the alert to gratify his dainty mistress, who compels him to bring all her viands unbroken, for if a fig or any fruit be injured, she will not touch it.

Buceros cavatus.

ယောင်ယင်။ ဘုံ၊ ဓိ။ ထိန်ကီး။

BLACK HORNBILL.

This species from its colour is called by the natives the black hornbill.

Buceros pusaran.

ယောင်ယင်နက်။ ဘုံ၊ ဘရ။ ထိန်တြးထိန်သူ။

SMALL HORNBILL.

Two other species are considerably smaller than the preceding.

Buceros albirostris.

" *plicatus.*

အောက်ချင်း။ ဘုံ၊ ခမာ။-ဘုံ၊ ခမာ နု။ ထိန်ခွန်။
ထိန်ခွတုန်။

CLIMBING BIRDS.

The *Scansores*, or climbing birds, embrace in these Provinces parrakeets, lorikeets, woodpeckers, barbets, creepers, nuthatches, and cuckoos.

BLACK-BILLED PARRAKEET.*

Immense flocks of parrakeets may be seen simultaneously descending upon the rice fields, where persons have to be in constant attendance to drive them away during the season of harvest. The bill of the female is black, and the natives say, always continues so; but Mr. Blyth remarks: "In a presumed female observed in captivity, the upper mandible changed from black to coral red, when the bird was about eighteen months old."

Palæurnis barbatus,

Swainson.

Psittacus

"

Gmelin.

" *pondicerianus,*

"

" *borneus,*

"

* The generic native names for all the parrakeets are

ကြက်တုရွေး။ ဘုံ၊ ချာ။ ထိန်ကံနီ။

<i>Psittacus bimaculatus</i> ,	Sparrman.	
" <i>javanicus</i> ,	Osbeck.	
" <i>Osbeckii</i> ,	Latham.	
" <i>mystaceus</i>	Shaw.	
<i>Palæornis nigrirostris</i> ,	Hodgson	(female.)
" <i>modestus</i> ,	Fraser	(female.)
ကုလား၊	ဝေါ့ဗလ - ဝေါ့ဗလေ.	မိယံ၊

BENGALEE PARRAKEET.

This species is mentioned as inhabiting the Provinces, but I have not identified it. I think it is included under the same native names as the black-billed parrakeet.

<i>Palæornis cyanocephalus</i> ,		
<i>Psittacus</i> "		
" <i>flavitorquis</i> ,	Shaw.	} the female.
" <i>annulatus</i> ,	Kuhl.	
<i>Palæornis flavicollaris</i> ,	Franklin.	
<i>Psittaca bengalensis</i>	Brisson.	
<i>Psittacus erythrocephalus</i> ,	Gmelin.	
" <i>ginginianus</i> ,	Latham.	
" <i>rhodoccephalus</i>	Shaw.	
" <i>narcissus</i> ,	Latham.	

ကုလား၊

?

ကျေတမိ၊

Arracan.

ROSE-WINGED PARRAKEET.

Another parrakeet that comes in smaller companies, which has not the habit of simultaneous descent is often seen in the rice fields.

<i>Palæornis torquatus</i> ,	Blyth.	
<i>Psittaca torquata</i> ,	Brison.	
<i>Psittacus Alexandri</i> ,	Latham, var. B.	
" <i>cubicularis</i> ,	Hasselquist.	
" <i>docilis</i> ,	Vieillot.	
" <i>steptophorus</i> ,	Desmarest.	
<i>Sulphur Parrakeet</i> ,	Shaw.	
ကျေကျတ်၊	ခပ်ခပ်၊	ထိပ်ကံဒ်၊

ALEXANDRINE PARRAKEET.

This soldier-like parrakeet with scarlet epaulettes, is found in Provinces Amherst, Pegu, and Arracan, but I

never saw it in Tavoy or Mergui. It is the bird that was sent to Alexander from Ceylon; and hence its specific name. Some critics think that parrots were shipped by Solomon's fleet rather than peacocks; but they appear to have been unknown in Europe till the days of Alexander, which would hardly have been the case, had Solomon introduced them into Judea seven centuries before.

Palaeornis Alexandrinus.

" *Alexandri*, Edwards.

Psittacus Alexandri, Linn.

" *eupatria*, "

Psittaca ginginiana, Brisson. } the female.

" *guinneensis*, Scopoli

" *Sonneratii*, Gmelin.

Palaeornis nipalensis, Hodgson.

ကျေးဇာင်းခါး ခပ်ချပ်၊ ထိပ်လိ၊ ထပ်လိကျီကိန်၊

RED-RUMPT LORIKEET.

This is one of the smallest birds of the parrot tribe, with a green body and a red rump. Its child-like notes are among the most familiar sounds in the interior during the declining day. Its Burman name signifies " headlong," from its habit of suspending itself from the tree, head-foremost like a bat.

Loriculus vernalis.

Psittacus "

" *gulgulus*, Horsfield.

ခွန်းထိုး (ကျေးသတား Arracan.) ခပ်ချပ်ခပ်ချပ်—

ဝမ်းမလေအံ့၊ ထိပ်ကိုင်ဆွဲ၊

GREEN WOODPECKER.

A large green woodpecker that inhabits the Provinces, is described as having " the neck, breast, and under-parts very deeply tinged with green, ear-coverts grey."

Picus (Gecinus) viridanus, Blyth.

" *dimidiatus*, Temm.

" *affinis*, Raffles.

ခပ်သိမ်း၊ ထိပ်ခွေး

BLACK-CROWNED GREEN WOODPECKER.

Another species of green woodpecker is seen on this Coast, of which Mr. Blyth writes: "This species is *about ten or eleven inches in length*, dusky-green above, with a shade of yellow on the lower part of the back; cinereous or *slightly ferruginous* below, *mixed with brown on the abdomen*. Quill-feathers brown, spotted with white. Tail-feathers brown, pointed as usual in this genus; the two uppermost with a few light-coloured spots along their inner margin. A gray patch encircles the eyes, bounded below by a black stripe mixed with white spots, which runs from behind the lower mandible. In the male the crown of the head is red, often variegated with black, each feather being black at the base and red at the tip; in the female it is *entirely black*.

Picus ocipitalis, Vigors.
" *barbatus*, Gray.

ARRACAN GREEN WOODPECKER.

Both the preceding species are found in Arracan, and also a third.

Picus flavinucha, Gould.
" *flavigula*, Hodgson.

BLACK WOODPECKER.

There are numerous woodpeckers in the Provinces, among which a black species is very abundant.

Picus (Meiglyptes) jugularis.

ငှက်သစ်တောက်၊ ညောင်ရမ်း၊ ထိုင်းသို့သွား

RUFIOUS INDIAN WOODPECKER.

This species is known to be a native of Arracan, and I think I have seen it in these Provinces. The fourth one is small.

Picus (Micropternus) phaeiceps, Blyth.
" *rufus*, Latham.

BLACK-BELLIED WOODPECKER.

A woodpecker with the "lower-parts black, the feathers laterally edged with dingy golden-fulvous," has recently been described as a new species, belonging to the pied section of the genus.

Picus (Dendrocopus) atratus.

RED-PLUMED WOODPECKER.

A black-backed woodpecker, the male distinguished by a crimson tuft on the head, is a numerous species in the Provinces. It differs very slightly, Mr. Blyth says, from the Molucca woodpecker, *P. Moluccensis*.

Picus (Dendrocopus) canicapillus.

OCHRACEOUS WOODPECKER.

An ochraceous woodpecker is mentioned as inhabiting Arracan.

Picus (Microcolaptes) ochraceus.

THREE-TOED WOODPECKER.

A species of woodpecker with three toes, instead of the ordinary number four, is found in the Provinces.

Picus (Tiga) intermedius, Blyth.

INDIAN BARBET.

Nearly every garden in Maulmain is vocal with the monotone of the Indian barbet, which the Burmese call "the smith," and the Karens the "gong-ringer." It is a beautiful bird, clothed in green, crimson, and yellow, and is quite familiar.

Bucco indicus.

ငှက်ပန်းတိန်၊ ဘုံယဝံလော့၊ ထိန်ခိန်ခါ၊

GREEN BARBET.

Another barbet resembling the above, but with more green in its colouring, is also common in the neighborhood of Maulmain: and these are all the barbets I have noticed; though Dr. Helfer said there were five different species of barbet on the Coast; in which event three more remain to be identified.

Bucco lineatus.

မိုးကောင်း၊ ဘုံယ လော့၊ ထိန်ကျိန်ခါ၊

ASIATIC BARBET.

A barbet with a blue breast is found in Arracan, but I have not met with it in these Provinces.

Bucco asiaticus

Trogon "

Shaw.

ကျွန်းလော့၊

RED-CHEEKED BARBET.

A barbet with three crimson spots on the face, which I have not noticed here, is found in Arracan.

Bucco trimaculatus.

ငှက်ပတိနီ

NUTHATCH.

A nuthatch with a blue back, a black forehead, and brown under parts, is not uncommon in the suburbs of Maulmain.

Dendrophila frontalis,

Swain.

Sitta

"

Horsfield.

ORIENTAL CUCKOO.

A black cuckoo, but of a different genus from the European bird, is seen both in these Provinces and Arracan.

Eudynamys orientalis.

Cuculus orientalis,

Linn.

ဦးခြောက် ဘုရား ထိုင်ထိုင်၊ ထိုင်မိုင်၊ မီးဝှံ ဘေးထွက်

KING-CROW CUCKOO.

A cuckoo resembling the king-crow, and another species with a slender bill and rufous abdomen, are mentioned as belonging to these Provinces.

Cuculus dicruroides.

" *tenuirostris.*

BOTTLE-GREEN CUCKOO.

A large bottle-green bird with a long tail, of the cuckoo tribe, is not uncommon.

Zanclostomus tristis.

Melias

"

Lesson.

ဝါးလေး၊

ဝတ်ဘရံ၊

မီးစမိုင်၊

မီးတမိုင်

SMALL GREEN CUCKOO.

Capt. Phayre met with a smaller species than the preceding, but of the same form and colouring in Arracan.

Zanclostoma sumatranus.

Melias Diardi,

Lesson.

Cuculus sumatranus,

Raffles.

AMETHYSTINE-PURPLE CUCKOO.

This attractive little bird is a beautiful specimen of the cuckoo tribe, distributed over some parts of our woodlands.

Chrysococcyx zanthorhynchos, Horsf.

Iampromorpha amethystina, Vigors.

Mr. Blyth had another species of the same genus from Arracan.

Chrysococcyx lucidus.

CROW-PHEASANT.

A large brown bird, which Europeans call "crow-pheasant," is often seen in Tavoy gardens, and belongs to the cuckoo tribe. The natives say that it lifts up its hoarse voice only when the tide is turning.

Centropus Phillipensis,

ဝတ်။ ခပ်ပေၤကု။ ကိကုၤ။

SUCTORIAL BIRDS.

The *Tenuirostres*, or suctorial birds, are represented in the Provinces by honey-suckers, sun birds, and hoopoes.

HONEY-SUCKER.

A honey-sucker, a small bird with a long bill, yellow and olive green back, is often seen in our gardens. It corresponds very nearly to Blyth's description of

Arachnothera inornata, Temm.

Certhia affinis, Horsfield.

" *longirostris*, Jerdon.

ပန်းပွင့်ဝတ်။ ခပ်ပေၤကုၤ။ ထိပ်သကွၤ။

GOALPARA SUN-BIRD.

We have several species of sun-birds on our Coast resembling the humming birds of America, for which they are sometimes mistaken. Their gorgeous plumage may be often seen glistening in the sun as they drink upon the wing the nectar of the flowers. The goalpara is one of the largest of the class, and is sometimes called the Goalpara creeper. It is an elegant little creature, with a brilliant carmine breast and neck, and a splendid cap of dark shining green.

<i>Nectarinia galpariensis</i> ,	Jardine.
<i>Certhia</i> "	Royle.
<i>Cinnyris Vigorsii</i> ,	Sykes.
<i>Nectarinia Seheria</i> (?),	Tickell.

ပန်းပွင့်တိုင်း ဘုံသံခွက်တူ. ထိပ်သင်္ကန်း

OLIVE-GREEN SUN BIRD.

The most abundant sun bird in the Tenasserim Provinces is perhaps this species; which Mr. Blyth describes thus: "Colour of the upper-parts dull olive-green, brightening a little on the rump: beneath, moderately bright king's yellow; and the axillary tuft intense yellow with flame-colour anteriorly: throat and front of the neck very dark glossy purple, margined laterally and at the gorget with bright steel-purple, below which is a trace of a narrow band of dark red."

<i>Nectarinia jugularis</i> ,	Vieillot.
" <i>hammazillaris</i> ,	Blyth.

STRAIGHT-BILLED SUN BIRD.

Another of our common sun birds has a straighter and shorter bill than the preceding.

Anthreptes phaenicotis.

RED-BACKED SUN BIRD.

A small black sun bird with a brilliant scarlet back is another of our gaudy little visitors.

Dicaeum erythronotum.

OTHER SUN BIRDS.

There are other species both in these Provinces and Arracan.

	<i>Dicaeum cantillans</i> .	
	<i>Nectarinia asiatica</i> ,	Latham (Arracan.)
SYN.	" <i>mahrattensis</i> ;	"
"	<i>Certhia</i> "	"
"	" <i>saccharina</i> ,	Shaw.
	<i>Nectarinia Gouldiae</i> ,	"
	" <i>Hasseltii</i> ,	Temm. "
SYN	" <i>Phayrei</i> ,	Blyth.
"	<i>Certhia sperata</i> ,	Raffles.
	<i>Dicaeum Tickelliae</i> ,	Blyth (Arracan.)

SYN. <i>Dicaeum minimum</i> ,	Blyth.
“ <i>Nectarinia minima</i> ,	Tickell.
“ <i>Certhia erythrorhyncha</i> ,	Latham.

HOOPOE.

The hoopoe is one of the few birds that we have in common with Europe, and which was well known to the ancients. According to Grecian mythology, Terens, king of Thrace, was turned into a hoopoe, hoopoes having been first seen on his monument; and in some parts of Europe it is regarded as a bird of omen. It is the lapwing of Leviticus and Deuteronomy, in our received version. On this Coast, as in other parts of the world, it appears to be a bird of passage, for not one is seen in the rains, although during the dry season, they show their arched, buff-coloured crests in almost every garden in Maulmain.

Upupa epops.

တောင်ပိရတ်၊ ဘုံ၂၆၇၊ ဘိစံးပိန်၊

WIDE-MOUTHED BIRDS.

The *Fissirostres*, birds with a wide gape, embrace several species of bee-eaters, rollers, kingfishers, trogons, nightjars, swallows, swifts, and swiftlets.

GREEN BEE-EATER.

The green bee-eater, a very handsome bird, is common all over the Provinces. The Karens call it the Mount Meru bird, because it is supposed to dwell there during the rainy season.

Merops viridis.

ငှက်ပင်းထိုး၊ မိုင်းနုကြီး (Arracan.) ဘုဘုံ၊ ဘိသံး၊

LARGE BEE-EATER.

In Arracan there is a larger bee-eater.

Alcemerops Athertonii.

ယူးတူးငှက်၊

ROLLER.

The roller, often by a misnomer called the blue jay, is diffused over all our compounds. The Burmese say that the most precious sapphire is exactly the colour of the

wings of this bird ; and it is hence called the “ roller sapphire.”

Coracias affinis.

“ *assamiensis.*

ငှက်ခါး ဘုံချာပဗ္ဗ. နီကွဲကွဲ. - နီကွဲကွဲ.

BROAD-BILLED ROLLER.

Another bird resembling a roller, but with a shorter and broader bill, and longer wings, tenants Arracan groves.

Eurystomus orientalis.

မိုဗ်းကောင်းငှက်

BLUE-BACKED KINGFISHER.

A small kingfisher with a blue back that I sent Mr Blyth, was

Alcedo bengalensis.

မိန့်ညင်းကလေး. ဘုံချ. ထိန်ဒိန်.

LARGE KINGFISHER.

A large blue-backed kingfisher is often seen on the banks of our rivers, whose skins are exported to China for their elegant feathers.

Alsedo sinensis.

မိန့်ညင်းကြီး (ပဝင်ကြီး Tavoy.) ဘုံချ ဖာ ဝဝံ.
ထိန်ဒိန်ဖာဒိန်.

HALCYON.

The halcyon said to be another of the kingfishers on this Coast, common to India and Ceylon.

Halcyon gurial.

မိန့်ညင်း. ဘုံချ. ထိန်ဒိန်.

OTHER KINGFISHERS.

The Karens have distinctive names for five other species of kingfishers; and Capt. Phayre found three more in Arracan.

Halcyon Ameuropterus, (brown-winged.)

“ *capensis,* (blue-winged.)

ထင်မိန့်ညင်း.

Ceyx purpurea, (small.)

မိန့်ညည်း.

TROGONS.

Some of the trogons are most magnificent birds. The *Trogon resplendens* is said to have plumes three feet in length, intensely brilliant, of metallic golden green, which were used by the ancient Mexicans as ornaments to their head-dresses. A green-headed trogon is found in these Provinces, and a red-headed species in Arracan.

Harpactes oreskios, (head green.)

" *erythrocephalus* (" red.)

ထွဋ် (Arracan.)

NIGHTJAR.

A nightjar, or goat-sucker, is one of our most common nocturnal visitors, and its loud sounding note may be often heard serenading the sleepless traveller in the stillness of midnight. Its monotone is so much like *cake*, the Karen word for *chop*, that whenever noticed by the Karens they say, "the nightjar is chopping down his trees." The American whip-poor-will is a bird of the same genus. Besides the common Tenasserim species, a second inhabits Arracan.

Caprimulgus macrurus.

" *menticolus* (Arracan.)

မြေဝတ် (ငှက်မြင်း Arracan.)

ဝပ်ပတ်. ထိပ်သတ်.

LYNCORNIS.

Mr. Blyth mentions another bird in the Provinces of the nightjar tribe, which he calls a very beautiful bird.

Lyncornis cerviniceps, Gould.

SWALLOW.

A swallow resembling the common English species abounds over all parts of the Coast.

Hirundo.

မြေဝတ် ဘု လျှံ လျှံ. ဘျပ်ချပ်မြေ.

Capt. Phayre met with two other species in Arracan.

Hirundo rustica.

မိုင်းရေငှက်.

Hirundo daurica.

မြေဝတ်

SPINY-TAILED SWIFT.

The spiny-tailed swift, a bird resembling the swallow, tenants the groves of Sandoway.

Acanthylis caudacuta.

Hirundo

“

Latham.

EDIBLE-NEST SWALLOW.

The swallows, or swiftlets which build the edible nests, are so numerous in the limestone caves on the islets and islands on the Tavoy coast, that the Government revenue from the bird-nest farm in 1847 was nearly eleven thousand rupees; but in 1849, it was more than four thousand rupees less. At Mergui they are not so numerous.

The nests are of several qualities, the best being those which are taken before the bird lays its eggs, and which sell in China for about forty-five rupees the pound.

In relation to the identification of the species Mr. Blyth says: “As regards the *Hirundo esculenta* of Linnæus, there is no reason to suppose that this as described, with yellow irides and white-tipped tail, has any prototype in nature: the latter would be an anomaly throughout the cypselidæ, but may refer perhaps to the white tail-markings of some real hirundo, erroneously supposed to be the constructor of the edible nests. Dr. Horsfield gives the species termed *lawet* by the Javanese as *Hirundo esculenta*, Osbeck stating that the specimens which he examined in Java, and those which he took to England, differ from Latham’s description in being uniformly of a blackish colour, without a white extremity to the rectrices. Another species, the *linchi* of the Javanese, he gives as *H. fuciphaga*, Thunberg stating that ‘its nest is constructed of mosses and lichens, connected with the same gelatinous substance which composes the edible nest of the preceding species.’ In the Journal of the Indian Archipelago, the same two species are distinguished by the names *lawet* and *lintyc*, and the nest of the latter is described to be without the least value. And it is added: ‘The residence of these swallows, or swiftlets, termed *lintye* in the caves, contributes greatly to the injury of the holes, for which reason they are destroyed as much as possible at each gathering. The nests which they make are con-

structed of grass-stalks. They are, however, of the same form, and are as artfully made as the others.'

"Heer Hooyman likewise states, that besides the *lawet*, other species resort to the same caverns, which are named *momomo*, *boerong-itam*, *boerong-zoekve*, and *lintje*. 'These,' he adds, 'are very similar to each other, excepting the second, which has the head larger; and the feathers of all are entirely black. The nests which they construct are black and friable, composed of a light down.' (Agglutinated?) 'An opinion prevails that the presence of these birds is injurious to the caverns, on which account they are driven away as much as possible.' Another writer in the same volume of the Bataviaasch Genootschap, mentions the *momos* or *boerongitam* (thus bringing together M. Hooyman's first two species,) as a large kind with plumed tarsi, indicating thus a true cypselus, which is probably the constructor of the nests assigned by Dr Horsfield and others to the *linchi*. Assuredly however, the *C. fuciphaga*, (Thunberg,) *linchi* or *lintye* of the Javanese, identical upon comparison with Javanese specimens, would appear to be the sole producer of the numerous nests gathered on the rocky coasts of the Bay of Bengal: and the often quoted notice by Sir G. Staunton, in his account of the Earl of Macartney's Embassy to China, must refer either to *C. fuciphaga*, or to an entirely new species, which is hardly to be supposed in the locality. For he remarks: 'The birds which build these nests are small grey swallows, with bellies of a dirty white. The white belly is characteristic of *C. fuciphaga*; and this particular species occurs abundantly on parts of the coast of the Malayan Peninsula, in the Nicobar Islands, and the Mergui Archipelago, and so high as on certain rocky islets off the southern portion of the coast of Arracan, where the nests are annually gathered and exported to China. From all this range of coast we have seen no other species than *fuciphaga*, nor does it appear that any other has been observed; and we have examined a multitude both of the adults and of young taken from the nests, collected in the Nicobars and preserved in spirit, all of which were of the same species. Still, what appears to be *C. nidifica* inhabits the moun-

tains far in the interior of India, though hitherto unobserved upon the coasts; and it is worthy of notice that *C. fuciphaga* does not appear to have been hitherto remarked inland in this country."

It may be here added that *C. fuciphaga* is constantly seen inland in these Provinces. The Karens in the valley of the Tenasserim in the latitude of Tavoy, are well acquainted with the bird, and they say it crosses the mountains to and from the interior every year. That it is the same species there can be no doubt, for the Karen name of the bird is "the white swallow," from its white belly.

Collocalia fuciphaga.

Hirundo fuciphaga,

Thun.

ဝိဝိး

ဘဟုးဟုဒ္ဒါ

ဆူင်ဆူင်ဝါ

GALLINACEOUS BIRDS.

The *Rasores*, of which the domestic fowl is the type, embrace in these Provinces peacocks, peacock-pheasants, pheasants, wild fowls, partridges, three-toed quails, green pigeons, rock pigeons, wood pigeons, and turtle doves.

GREEN-NECKED PEACOCK.

The handsomest peacocks perhaps in the world inhabit our forests in great numbers. They do not usually approach the towns, though I have often seen them in the neighborhood of Burman villages. The Burmese have a saying, that "wherever there are peacocks, there are tigers."

Pavo muticus.

ပွဲခေါင်း

ဘုံဂါး

ထိပ်ငှ်း

PEACOCK-PHEASANT.

The peacock-pheasant of Arracan is the Thibet peacock-pheasant, but the natives describe a crested peacock-pheasant as inhabiting this Coast, whose brilliant ocellated plumage equals in its play of colours the celebrated species of the Moluccas.

Polyplectron chinguis, (Thibetian.)

Pavo thibetanus,

"

Polyplectron emphanum, (crested.)

ခေါင်း

ဘုံဂါးပွဲ

ထိပ်ငှ်းပွဲ

TENASSERIM PHEASANT.

A pheasant often seen in the neighborhood of villages, is abundant throughout all the Provinces, and in Burmah.

Euplocomus lineatus.

ရင်း၊ ဘုံကံလ်၊ ထိန်ဝင်း၊

ARRACAN PHEASANT,

The Arracan pheasant, Mr. Blyth says, is an intermediate race between the Assam and Tenasserim pheasants.

Euplocomus Horsfieldi. (Assam.)

SILVER PHEASANT.

The Chinese, or silver pheasant, I have seen in confinement, and the southern provinces are said to be its habitat, but I have never met with it in our forests. Capt. Phayre found it in Arracan. The chaste hue of this bird contrasts delightfully with the magnificent colouring of the other species.

Phasianus fasciatus.

ARGUS PHEASANT.

The Karens have shown me the quill-feathers of a bird that is found in Mergui, which I judge to belong to the argus pheasant.

Argus giganteus. ?

TURKEY.

The turkey has been introduced, but not extensively.

Meleagris gallopavo.

ကြက်ဆင်း၊ ဟုံခဟုံ၊ ဆိကဆိ၊

JUNGLE FOWL.

Wild fowls are so numerous, that the crowing of cocks at dawn of day in the deepest parts of uninhabited jungles, is quite as loud as in the centre of villages. All our domestic fowls are supposed to be derived from this species, which differs from the jungle fowl of Ceylon and Hindustan.

Gallus ferrugineus.

" *bankivus.*

တောကြက်၊ ဟုံယုံ၊ ဆိမုံ၊

WILD YELLOW HEN.

The southern Karens describe a gallinaceous bird which they call the wild yellow hen, its colour being yellow and white. It is said to be the size of a hen, and that the male has two spurs on its legs, but I have never seen it.

၅၇ မာ်း မံ ဟ်

ထိန်ဆိမံမိန်ဘိး

PARTRIDGES.

I have occasionally seen a partridge resembling the English partridge, without a spur, but it is a rare bird. There are two species in Arracan, but whether the same or not I am unable to say, as I have their names, but not their descriptions.

Pardiz Phayrei.

“ *olivacea.*

၁၈

THREE-TOED QUAIL.

The three-toed quail is a common bird on the sea-coast.

Turnix atrogularis.

၆၃

ဗာ် ဟ်ဒုာ်.

ထိန်လွန်ကလုာ်

RED, AND PAINTED PARTRIDGE.

On the Irrawaddy, between Ava and Rangoon, Dr. Griffith met with “red and painted partridges and quails,” but he does not give the systematic names.

Perdix chukar?

ROLLULUS.

Mr. Blyth mentions a bird related to the partridge in these Provinces, which he calls.

Rollulus (?) ocellatus.

The corresponding race in Arracan he says is

Arboricola atrogularis,

Blyth.

YELLOW-BREASTED GREEN PIGEON.

This is the most common green pigeon in the Provinces. The male is “distinguished by having a large

buff-orange patch on the breast, and above this a lilack band."

<i>Treron bicincta</i> ,		Vieillot.
<i>Vinago</i> "	(male.)	Jerdon
" <i>unicolor</i> ,	(female.)	"
" <i>vernans</i> ,		Lesson.
ငါး	ပွားရုပ်၊	ပက္ခိယျာဉ်၊

NEPAUL GREEN PIGEON.

The Burmese and Karens have no name to distinguish this species from the preceding, but call both by the same name.

<i>Treron nipalensis</i> ,	Hodgson.
<i>Toria</i> "	"

YELLOWISH-HEADED GREEN PIGEON.

The natives see no difference between this species and the two preceding. "It is distinguished by having the anterior half of the head, and the medial portion of the tail, of the same yellowish green as the breast."

Treron viridifrons.

MALABAR GREEN PIGEON.

This bird has not been found in these Provinces, but it has been observed in Arracan, where the Arracanese call it *gnu*, as the Burmese do the other species.

<i>Treron Malabarica</i>		
<i>Vinago</i> "		Jerdon.
" <i>aromatica</i> ,	(male)	"
" <i>affinis</i> ,	(female)	"

GAMPSORHYNCHUS.

Mr. Blyth describes a curious bird related to the green pigeons, and nearly allied to Swainson's genus *sphenurus*, which he received from Arracan.

<i>Gampsorhynchus rufulus</i> ,	Blyth.
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FRUIT-PIGEON.

A large wild fruit-pigeon is often seen, and a second species has been found, in Arracan.

<i>Carpophaga sylvatica</i> ,		
" <i>insignis</i> ,		(Arracan.)
မြီးပတ်း၊	ဘုမ္မာပတ်း၊	

GROUND-PIGEON.

A handsome, dark-green ground-pigeon, is not uncommon.

Chalcophaps indica;

Columba " Linn.

မြင်းခြံ-ငှက်၊ ဘုံဂျုံခ၊ ထိပ်လွန်ခါ။

INDIAN ROCK-PIGEON.

This is the bird from which the domestic pigeons of India are derived, and which we have tame, if not wild. The principal difference, Mr. Blyth says, between the pigeon of India and Europe is, that the former "has a white rump and the latter a deep ash-coloured rump. There appears to be no other distinction between them; unless it be that the play of colours on the neck is finer in the Indian bird."

Columba intermedia.

ခိုး၊ လေပါ၊ ကံကွန်။

POMPADOUR WOOD-PIGEON.

This is a wild pigeon whose "general colour is deep vinaceous ruddy," that Mr. Blyth had from the island of Ramree.

Columba punicea.

TURTLE DOVE.

The plaintive coo of this speckled turtle dove is heard alike in the neighborhood of our large towns, and in the depths of our thickest forests. It is often seen in cages, and is the turtle dove of the Bible.

Turtur suratensis.

Columba turtur, Linn.

မြီးလယ်ငြောက်၊ ဘုံဂျုံခံဝံ၊ ဘုံဂျုံခံဝံ၊
ထိပ်လွန်ဘူ၊ ထိပ်လွန်ခိုး။

RING-DOVE.

A turtle dove of a brick colour, with a half collar on the neck, sometimes called the ring-dove, is not uncommon.

Turtur humilis.

မြီးလင်းငြာ၊ ဘုံဂျုံ၊ ထိပ်လွန်။

FOX-COLOURED TURTLE DOVE.

This is a brownish dove, seen occasionally, but not often.

Turtur meena.

မြိန်တူလ် ဘိယံဂါ. ထိန်ပိန်.

NICOBAR PIGEON.

The Nicobar pigeon with its elegant neck-frill, is sometimes seen in confinement, and the Burmese call it by the same name that they do the partridge, and roller. I have never met with it in the jungles, although some of the natives tell me it is found there.

Calenas nicobarica, Blyth.

Goura "

Geophilus nicobarensis.

ဂါ.

WADING BIRDS.

The *Grallatores*, or waders, are numerous. In these Provinces and Arracan, there are herons, bitterns, demi-egrets, adjutants, cranes, ibises, open-beaks, rails or coots, water-hens, snipes, curlews, sand-pipers, oyster-catchers, snippets, turnstones, and plovers.

WHITE PADDY-BIRD.

Near the sea-coast, the bordering trees are often splendidly illumined with a beautiful heron, whose snowy plumage amid the deep emerald foliage, looks in the distance like magnificent white blossoms : it is called in this country the white paddy-bird.

Ardea alba.

ချိုင့်. ဘိယံဒါ. - ဂါ. ထိန်ပိန်. ထိန်ပိန်.

GREY HERON.

A species of grey heron is common at Tavoy, in the interior as well as on the sea shore. The Karen name this bird bears at Tavoy, is at Maulmain appropriated to a species of rail or coot.

Ardea.

ချိုင့်. ဘိယံဒါ. - ဘိယံဒါ. ထိန်ပိန်. ထိန်ပိန်.

NIGHT-HERON.

In the dark silent night the voyager is often startled by the dolorous scream of the night-heron along the shores, whose loud roar so much resembles the bellowing of a cow, that the Burmese call it the "cow-bird," which reminds us of the "bull-of-the-bog," one of the names of the bittern.

Nyctiardea,

Swain.

ငက်ငွေ့ခါး

OTHER HERONS.

There are other herons on the Coast which I have not identified. Capt. Phayfe found the following in Arracan.

Ardea malaccensis.

ချိုင်းအောက်

Ardea purpurea.

ပြိုချိုင်း

Ardea schistacea,

(large, slate colour.)

" *fusca*.

(brown.)

" *ardesiaca*,

(small, slate colour.)

" *cinerea*

(common British, brown.)

ငက်ငွေ့ခါး ငှက်

Nycticorax griseus*

(night-heron.)

DEMI-EGRET.

A demi-egret is met with in Arracan, but I have never seen it in these Provinces. "Colour," says Mr. Blyth, "uniform dark slaty throughout; some specimens having a white line on the chin and throat. Adults have narrow lengthened plumes on the back and breast, similar to those of *Ardea cinerea*: the occipital plumes also are somewhat lengthened, as in herons generally; but I have seen no defined occipital crest, and doubt its ever possessing one. Beak mingled dusky, and dull yellowish, and the legs appear to have been olive-green."

Demigretta concolor.

* *Nyctiardea*,

Swainson.

TIGER BITTERN.

The Asiatic Society's Museum in Calcutta contains specimens of a curious tiger-bittern received from Arracan. *Tigrisoma melalophos.*

ADJUTANT.

Among the problems given Dr. Helfer to solve when he visited our shores, was, to ascertain if the breeding of adjutants takes place here, "as well as its manner." He replied on returning to Calcutta: "The *Ciconia argala*, or the common Calcutta adjutant, is never seen on that Coast." Here he was mistaken. It is very common in Province Amherst; and it builds its nest, the Karens inform me, in the inaccessible summits of the mural limestone rocks, and occasionally near the tops of large wood-oil trees.

The under tail-coverts are delicate and floating, forming plumes of the most exquisite texture, which, in Maulmain command a high price. These plumes are known in England by the term marabou, a name taken from the African species. The natives tell me there are two species of adjutants, one of which produces finer plumes than the other; but I have seen only one, and doubt the existence of two species.

Ciconia argala, Vigors.
Leptoptilas argala.
Argala gigantea.

ထုံးစပ် နိုးစပ် ငှက်ကြီး ဘုံပဝံ့၊ ထိပ်ဒိဉ်၊
နိုးမြီးကွက် (with handsomest plumes.)

BLACK AND WHITE WADING-BIRD.

A bird described as a crane, or tantalus, with a white breast, and black bill, head, and back, is found in Amherst province, but I have never seen it. A part of the plumes offered for sale are said to be the under tail-coverts of this bird, but inferior to those furnished by the adjutant.

စိုက်လာ၊ ကုခါ၊ ထိပ်ထိပ်၊

CRANE.

A large slate-coloured crane is often seen stalking about the paddy fields, and near the sea-shore. It is sometimes called the adjutant without a pouch.

Grus antigone.

ကြီးကြာ၊ ခြံ၊-စပ်၊လပ်၊ ထိပ်ထီးကျိ၊
ထိပ်မိန်၊ ထိပ်ကြွေး၊ ရွက်ကွက်၊ ဟိ၊

RED-RUMP.

A bird which I have not seen is represented to me, by the natives, as of the heron tribe, but is said to have a red rump. The Burmese call it by the name given to the broad-bill in Arracan.

ငှက်ဆတ်၊ စပ်၊ဝေး၊ခါ၊ ထိပ်ငါးခံ၊

IBIS.

Capt. Phayre met with a white ibis in Arracan, nearly related to the sacred ibis venerated by the Egyptians.

Ibis Macei.

ခရုရတ်အဖြူ၊

OPEN-BEAK.

Another bird of the ibis tribe inhabits Arracan, whose lower mandible is curved, and touches the upper at the base and top only.

Anastomus coromandelianus.

၊ ခရုရတ်၊

RAIL OR COOT.

In Province Amherst, I have noticed a species of rail or coot.

Rallus, vel Fulica.

ရေကြက်၊ စပ်၊မေး၊ရ၊ ထိပ်ကျိ၊ရ၊ကွေး၊

WATER-HEN.

A species of water-hen inhabits Arracan.

Gallinula javanica.

“ *phænicura.*

ကလေးကွက်၊

SNIBE.

The snipe is a very common bird in the Provinces, but commands a high price in bazar.

Scolopax heterura, (Arracan.)

မြေဝတ် (ခင်ရော် Arracan.) ခပ်ခဏဂံၤ-ခပ်ပက်ဒါ
ထိပ်ထိန်၊ ထိပ်ထီးဆဲး

CURLEW.

The curlew is quite abundant on the sea-shore.

Numenius arquata, (Arracan.)

မြို့မလက်ဆဲးဂံၤ (ကုလားကောက် Arracan.)

TURNSTONE.

I think I have seen the common turnstone, on the sea-board.

Streptilas interpres.

OYSTER-CATCHER.

Mr. Blyth has had specimens of the common European oyster-catcher from Arracan, and I believe it inhabits these Provinces. He appears to regard it as identical or nearly so with the Australian species, so it is a very widely distributed bird.

Himantopus ostralegus.

" *longirostris* (Australia.)

" *picatus* "

SAND-PIPER, AND SNIPPET.

Sand-pipers and snippets are common in Arracan, and if I am not mistaken on this Coast also.

Tringus, (*Sand-piper*.)

Totanus, (*Snippet*.)

ခင်ရော်

SPUR-WINGED PLOVER.

A species of plover with a spur on the wing is a common bird.

Pluvianus spinosus.

တိတိတု၊ တိတိတု (ငှက်တလျှိုင်း Arracan.)

ခပ်ခဏဂံၤ၊ ထိပ်တုဝ်၊ ထိပ်တံၤကြံ

A * *

COMMON PLOVER.

A species of plover without a spur is also seen.

Pluvianus goensis, (Arracan.)

SWIMMING BIRDS.

The *Natatores*, or swimming birds, consist in these Provinces of wild ducks, teal, pelicans, snake-birds, cormorants, sea-swallows, gulls, and scissors-bills.

WILD DUCKS.

At least one species of wild duck is common on this Coast, and two are known in Arracan. One afternoon, having made a sudden egress, with my Karen guide, from a tunnel under Dongyan mountain, we raised an immense number. Hundreds and hundreds of ducks, teal, and other water-fowl burst from the rocks and fens, and wheeled over our heads, forming thick clouds forty or fifty feet above us, and all uttering one continued clang of wild sea music.

Dendrocygna major, (Arracan.)

Plectropterus melanotus, "

တောဝေဝဲ၊ ခပ်ဘာမာ၊ ကုရိဂါ

TEAL.

A species of teal is seen in great numbers on the plains, where there are lakes and ponds of water.

Dendrocygna arcuata, (Arracan.)

ဝေဝဲ၊ ခပ်ဘာခါ၊ ထိန်ခွန်ထံ၊ တား

BLACK-BANDED TEAL.

The Karens describe a small teal with a black band around its neck, which I have not seen, nor do I find it described.

ထိန်ကွန်ခွန်ကန်

GOOSE.

The goose has been introduced into the Provinces from other parts of India. All the domestic geese in India, Mr. Blyth says, are the mixed progeny of

Anser cinereus, and

" *cygnoides*.

ငန်း၊ ခပ်ဘာ၊ ထိန်တား

PELICAN.

This princely water-bird is no where abundant in these Provinces, yet it is seen netting fish with its capacious pouch in our solitary lowland streams and ponds. It is a fine swimmer, and the natives say it wheels high over the waters, then makes a sudden graceful sweep upon the shoals of fish beneath, which it skims up in great abundance.

Pelecanus rufescens?

ပိပို၊ ပိပို။

SNAKE-BIRD.

On some of our inland streams the darter is common. This bird resembles the cormorant, but has a much longer neck, which it lifts above the water when swimming, while its body is immersed, with a snake-like motion.

Plotus Vaillantii.

တင်ကျီ။

စိပ်၊ ခါ။

ထိပ်လဲ။

CORMORANT.

The cormorant, that ominous bird so dreaded by the Druids, has one representative on this Coast, which may be often seen fishing on the banks of fresh-water streams and ponds. Wordsworth, alluding to the sea-mew screaming around the arch Druid's brow, adds :

"And toward the mystic ring
Where augurs stood, the future questioning,
Slowly the cormorant aims her heavy flight,
Portending ruin to each baleful rite."

This bird is a noble fisher, and trained to that business in Holland and China. In Arracan it has the same name as the darter, but I have never heard that name applied to it in these Provinces.

Phalacrocorax Javanicus?

အောရော" (တင်ကျီ။ Arracan.) ဒရုဇာဝဝိာ။ ထိပ်အိန်ချီ။

SEA-SWALLOW.

A species of tern, or sea-swallow, as these birds are called in England, is often seen on the coast.

Sterna poliocerca,

Gould.

Thalaseus cristatus, ?

Stevens.

မြင်ထွေး။

OTHER SEA SWALLOWS.

Four other species of tern which are found in the Bay of Bengal, probably visit our coast.

Thalasseus, Bengalensis.

Melanosterna anasthætus,

SYN. *Sterna panaya,*

" " *infuscata,*

" " *antarctica,*

" " *grisea, ?*

SYN. *Hydrochiledon,* "

" " *marginata,*

Anous tenuirostris,

Scopoli.

Lath.

Licht.

Lesson.

Horsfield.

"

Blyth.

Temm.

GULL.

Gulls are common on the sea-shore, where they are called by the natives "sea-parroquets."

Larus fuscus ?

မြစ်တွေ၊ ပင်လယ်ကုက်တူရွေး၊ မျိုးစုံမျှမျှ၊

ထိန်ကံဒိန်ထိန်၊

SCISSORS-BILL.

At Tavoy the sheer-water, or scissors-bill, is frequently seen cleaving the water with its curious bill, the upper mandible of which is much shorter than the lower. It has never been noticed among the collections of birds sent to Calcutta, either from these Provinces or Arracan. A specimen that I examined differed in no important respect from the European species.

Rhynchops nigra.

ပင်လယ်ပေါ်ငှက်၊ ခပ်ပျံ့မာ၊ ထိန်ကံဒိန်ထိန်၊

TROPIC-BIRD.

A single species of tropic-bird, or boatswain-bird, with its two long tail feathers, is known to inhabit the Bay of Bengal; and it is rather remarkable that while it differs from the species found near the Mauritius on the west, *Ph. candicus*; and from the species found towards Australia on the east, *Ph. phœnicurus*; it is identical with the common tropic-bird in the Atlantic Ocean.

Phæton athercus.

ICHTHYOLOGY.

“Almost every reptile and fish of the Tenasserim coast must necessarily be new,” remarked a gentleman of no ordinary scientific attainments. And it is a very common error to suppose that, because the productions of a country are unknown, they are therefore new to science. No one appears to have examined our fish, but a collection of twenty-seven species that I sent Mr. Blyth, contained only one new species, though the principal part of them were fresh-water fish; and from the little attention I have been able to bestow upon them, I judge that by far the larger proportion of our fishes are common to other coasts bordering the Bay of Bengal.

LARGE SCALED-FISH.

The *Macroleptes*, or large-scaled fish of the order with spinous rays in the dorsal fin, embrace on this Coast, perch, cockup, band-fish, umber, Indian whiting, mullet, mango-fish, king-fish, climbing perch, and snake-heads.

LARGE PERCH.

A perch which sometimes grows two feet long is often seen in Maulmain bazar, and is esteemed a valuable fish by Europeans. The formula of the fin rays is,

D. 7, 1-11: P. 15: V. 1-5: A. 3-9: C. 17.*

Perca.

ငါးကကတစ် ဗျာခာဂါ. ညဉ်ကးသထဲ.

SMALL PERCH.

A small species of perch is common in the interior of the Provinces.

D. 7, 1-14: P. 10: V. 1-5: A. 3-15: C. 18.

Perca,

Linn.

ငါးစင်စတ် (ငါးဖြေသက်. *Tavoy.*)

ဗျာဂါ.

ညဉ်တုန်ခိး

* That is D., the dorsal has in the first fin 7 rays all spinous; in the second fin 1 spinous, and 11 that are soft. P., the pectoral fin, has 15 soft rays. V., the ventral fin has 1 spinous ray, and 5 that are soft. A., the anal fin has 3 spinous and 8 soft rays. C., the caudal fin has 17 rays.

COCKUP.

A fish which Europeans in India call cockup, is very common on the coast, and often ascends the large rivers a long distance. Crawfurd found it a hundred and twenty miles from the sea, in the Irrawaddy, and characterizes it as "one of the best Indian fishes." It resembles the basse, or wrasse, and I know it from examination to be of the genus *lates*, and I have good reason to believe it is *L. nobilis*, though I am unable to speak with certainty, for the want of books which describe that species.*

Lates nobilis ?

ငါးကသာပေါင်း၊ ဗျာဓိဗုဒ္ဓ၊ ညှပ်စူခဲ၊ ညှပ်စိန်စူခဲ။

SILAGO.

A salt-water fish less than a foot in length, with the first ray of the two dorsal fins very long, is seen occasionally in bazar. It belongs to Cuvier's genus *silago*, and Mr. Blyth, to whom I sent a specimen, said it was

Silago acuta.

ငါးပလွေ။

BAND-FISH.

At the fishing villages on the sea-coast I have noticed a species of *chaetodon*, or band-fish.

Chaetodon.

ငါးဝဲ၊ ဗျာဓိဗုဒ္ဓ၊ ညှပ်သုန်စိန်ထဲ။

ELEPHANT-EAR FISH.

A fish of the *chaetodon* tribe, which the natives call "elephant's ear," from its shape, is found in great abundance on the Tavoy coast. It resembles

Pomacentrus marginatus.

ငါးဆင်နား၊ ဗျာဓိဗုဒ္ဓ၊ ညှပ်ကဆိန်။

* Crawfurd gives *Cais vacti* as the systematic name of cockup, but that is a species of India whiting, and I have the authority of Dr. McClelland for appropriating the name to *L. nobilis*.

UMBER.

A species of umber, a fish resembling a perch, sometimes called sea-perch, was among the described species that I sent Mr. Blyth.

Sciaena.

ပင်လယ်ငါးငြိမ္မာ မာခဲဖော် ပျံ့မြဲ ညှပ်သုန်ပိန်ထဲန်

INDIAN WHITING.

There are two or three species of fish common in Calcutta that are called whiting, from their resemblance, both in form and flavour, to the European fish of that name. One species is frequently seen in the Maulmain bazars, and besides being a good fish for the table, its air-bladder makes excellent isinglass. I think I have observed more species than one sold under the same native name, but the specimen I sent Mr. Blyth he said was

Corvinus coitor.

ငါးပုတ်သင်၊ ငါးဘျက်၊ ငါးမြက်၊

BOLA.

This is another species of Indian whiting that also furnishes isinglass, and which Mr. O'Riley sent up to Calcutta from Amherst. Dr. M'Clelland wrote : " It belongs to the genus *corvinus*, closely allied to *C. niger*, but of monstrous dimensions compared with the European species."

Bola chaptis,

Buch.

Corvinus "

M'Clell.

နတ်ကတော်၊

O'Riley.

LARGE MULLET.

A species of mullet is very common, and is often seen on the tables of Europeans, by whom it is highly esteemed. Mr. Blyth, to whom I sent a specimen for the determination of the species, wrote that it was abundant in Calcutta, but "is of a species I could never determine from descriptions."

Mugil.

ငါးကဘလူး

LARGE-EYED MULLET.

We have another mullet, equally valuable for the table with the last, and equally common in Calcutta, but distinguished among other things by its small head, smaller scales, and goggle eyes which appear to be starting out of its head.

Mugil cephalotus,

Vallenciennes.

ငါးစင်း

ဗျာလရဲစာ

ညှပ်မြီးမင်း

SMALL MULLET.

A small mullet is often found in great numbers in the river near Maulmain, which many of the Burmese regard as the young of the preceding, but it is a distinct species, of which Mr. Blyth wrote that he had never seen it before, but had "made it out to be"

Mugil subviridis,

Valenciennes.

ငါးလှို

MANGO FISH.

This is a splendid fish and a favorite with many. It is nearly related to the mullets, and remarkable for the long filaments to the pectoral fins.

Polynemus paradiscus.

" *Risua*,

Buch.

ငါးနား

ဗျာဗာဗျာ

ညှပ်ထိပ်ဆူဂ်

KING-FISH.

A few years ago the attention of the Commissioners of these Provinces and Arracan was drawn to the fish that produce isinglass; and the result was, the discovery on our shores of the species of Indian whiting noticed above, and *Polynemus seale*, a fish that is found from Calcutta to Otaheite. The polynemus produces isinglass of the best quality, and Mr. O'Riley estimated that two thousand pounds might be obtained annually off Amherst alone. None of our merchants have yet entered into the isinglass speculation, but the sounds are a constant article of traffic among the Chinese.

Mr. Blundell said the largest sounds were exported from Rangoon, and that they sell here at about half a rupee a

pound ; and Major Bogle wrote, that about ten thousand of the fish, large and small, were taken annually in Arracan, and that the sounds sold there for about a third of a rupee per pound to the Chinese, who exported them to Penang, where they are said to bring more than a rupee a pound. The specimens that have been prepared in India for the European market, are "complained of," says Dr. M'Clelland, "as being too thick, if intended to come into competition with the superior varieties of Russian isinglass. The first quantities sent from India brought only 1s. 7d., others have been sold for 3s., and a few samples have been valued at 4s. per pound."

<i>Polynemus sele,</i>	Buch.
" <i>plebeius,</i>	Brouss.
" <i>lineatus,</i>	Lacep.
" <i>gelatinosus,</i>	M'Clell.

ကတုရံ

ka-tha (the young) O'Riley.
lukwah (Arracan,) Bogle.

ရဲဝင်း (Tavoy.)

Emoi (Otaheite.)

CLIMBING PERCH.

The climbing perch is a small fish, abounding in our waters, which has the power of climbing up out of the water on the roots of trees, and which will make its way on land, the Karens say, a quarter of a mile. It corresponds precisely to Gmelin's description of *Perca scandens* in his edition of Linnæus, excepting in some of the fin-rays ; more especially in the soft rays of the dorsal and anal. It was placed by Cuvier in his genus *anabas*, and to this Mr. Blyth referred a specimen I sent him ; but the fin-rays differ sufficiently to constitute it a distinct species.

D. 17-25 : P. 12 : V. 1-6 : A. 10-18 : C. 17. *P. scandens*, Gmelin.

D. 17-9 : P. 13 : V. 1-5 : A. 9-12 : C. 17. *The Tenasserim fish.*

AMPHIBIOUS SNAKE-HEAD.

Two or three species of *ophiocephalus* are very common. They are fresh-water fish, appropriately named, for the head is very much like a snake's head, and they are remarkable for the power of making their way from one pool to another on land. One species it is said, usually lives in hollow logs and holes, never in streams, and often a long time in the jungle without water. It appears to be either the same species, or a nearly related one to the *bura-chang* of Boutan, which the natives believe falls from heaven, from the circumstance of its being found after rain far from the water. Some of the Karens regard these with a superstitious awe, and abstain from eating them. They have a legend that they were formerly men, changed into fish for their sins; and the Pwo Karens at Tavoy say: "If people eat them, they will be transformed to lions." The fame of this fish had reached Greece more than two thousand years ago, for it is mentioned as a remarkable Indian fish by Theophrastus.

Ophiocephalus amphibeus?

ငါးရန်ဆင်းတို့။ ငါးပတက်။ ဟါဂျာဘွဲ့ဒံ။ ညှပ်လိပ်။

SPOTTED SNAKE-HEAD.

A species of *ophiocephalus* common at Maulmain, is remarkable for three black spots on the body just below the lateral line, at equal distances between the termination of the pectoral fins and the base of the caudal; and a bright red circle on the base of the upper lobe of the caudal fin, occupying nearly the whole breadth, with a deep black centre. Two small black dots are seen on the same lobe a little above the circle, and the dorsal and anal fins are spotted with white at the base, while these with the caudal are nearly black on the margin. In some specimens a reddish stripe runs from the eye just above the lateral line to the red spot on the tail. The back is dark, and the belly of a light or whitish colour. A full grown one is said to be a yard long. The fin-rays are,

D : 50. P. 16 : V. 5 : A. 36 : C. 12. (*long rays*.)

Ophiocephalus.

ငါးရန်မိုင်းမိုင်း။ ဟုဝေဂျာ။ ညှပ်ဆေးကံဉ်မိ။ ညှပ်သမိ။

BANDED SNAKE-HEAD.

A species of ophiocephalus with a singularly variegated marking is occasionally brought to the bazars. The upper parts are dark olive green, and above the lateral line the body is crossed with from fifteen to eighteen dark bands. The lower parts are tinged with rose on the sides, and banded with dark lines so as to meet the upper bands on the lateral line, and form an obtuse angle. It rarely grows a foot long.

I sent Mr. Blyth a specimen of either this species or the preceding, and he wrote : " This ophiocephalus is, I believe, not named, but I have before had it from Goalpara." The fin rays are,

D. 33 : P. 15 : V. 5 : A. 25 : C. 11.

ငါးရန်၊ ဗျါဒ၊ ညှိကမီးညှိလှီး

SMALL SNAKE-HEAD.

A smaller species of ophiocephalus, the natives call

ငါးရန်ပနာ၊ ဓမ္မပဏာ၊ ညှိပုတီး၊ ညှိသလူတူ၊

At Tavoy I have noticed a fish resembling a species of ophiocephalus, but of which I have no notes.

ငါးတယော၊ ဗျာသိုဇာ၊ ညှိသွန်ကူး

SMALL-SCALED FISH.

The *Microleptes*, or small scaled fish, including the other tribes with spinous rays in the dorsal fins, do not appear to be very numerous ; but they are represented in our waters by Indian mackerel or tunny, ophidians, long-snouts, dories, pomphrets, ribon-fish, flat heads, gobies, amblyopus-suckers, and periophthalmi.

TUNNY.

A fish of the mackerel tribe, often called Indian mackerel, or Indian tunny, belonging to the genus *thynnus*, is not uncommon at Tavoy.

Thynnus.

OPHIDIAN.

This fish is often described as resembling a small eel, but it has strong spines on the back, and before the anal fin.

Rhynchobdella ocillata.

ငါးမြေထိုး၊ ဗာ ၃၈၇. ညှိမ်း၊

BANDED OPHIDIAN.

Of another fish resembling the above in form, but of more brilliant colours, Mr. Blyth wrote : "The mastacem-balus with transverse stripes is a new species." A green and yellow ground on the back and sides is crossed by about twenty five blue bands. There are 29 spines before the dorsal, and three before the anal, and there are three on the preoperculum.

Mastacembalus.

ငါးမြေထိုး၊ (ငါးရင်ဘု၊ Tavoy.) ဗာ ၃၈၇. ညှိမ်း၊

LARGE-SNOUT.

A fish of the same tribe as the two preceding species is not rare ; it is nearly related to M'Clelland's *Macrog-nathus undulatus* from Chusan. Like that it has 37 spines on the back in front of the dorsal, and three before the anal. The pectoral fin is also round, and contains about 20 rays. It differs however in having a truncated caudal with about 20 rays, instead of a lanceolate one, and in the figuring on its sides.

Macrog-nathus.

ငါးရင်၊ ညှိမ်း၊ ညှိမ်း၊

SMALL DOREE.

A small fish of the doree tribe, common in our waters, Mr. Blyth said was,

Equula ruconius.

ပင်လယ်ငါးစင်စပ်၊ ပင်လယ်ငါးမြေသက်၊

ပု၊ ၁၅၁ ဗာ ၁၇၅. - ပု၊ ၁၅၁ ဗာ ၁၇၅. ဝိညာဉ်ညှိမ်း၊

POMPHRET.

This fish is very abundant on the Tavoy coast, and in a smooth sea may be seen deep in the water in great numbers, but they are very shy of the hook. They are considered one of the best fish for the table.

Stromateus ?

Linn.

ငါးပု၊ ငါးပါမောင်၊

RIBBON-FISH.

A species of ribbon-fish is very common at Tavoy, and is dried in large quantities.

Gymnetres.

ငါးတင့်ခါး ဟဲဟဲဟဲ ညှပ်ဆဲး

FLATHEAD.

A species of flathead which I sent Mr. Blyth proved to be

Platecephalus chaca.

GOBY.

A small fish about six inches long, with two dorsal fins and a depressed head, the under jaw projecting, is found in the bazars.

Gobius giuris.

ကသိး၊ ကသိး၊ ဟဲဟဲဟဲ.-လဲဟဲဟဲ. ညှပ်ဖိ၊ ညှပ်ခပ်ဘိ၊

POINT-TAILED GOBY.

A small goby with a lanceolate tail, and teeth on the front of the jaws like a pike, is sometimes seen in bazar. The dorsal and anal fins are long, reaching nearly to the base of the caudal.

Gobius ?

ငါးဖြိုး ညှပ်လိး

AMBLIOPUS-SUCKER.

This is an ugly looking fish, with the form of a small eel, having the ventral fins united into a concave disk like a sucker. The lower parts are red, and the upper lead colour.

Amblyopus

Cuv.

Psiloma,

Swain.

ငါးဖြိုးခိုး၊ ငါးဖိုကလေး

PERIOPHTHALMUS.

At least two different species of this genus may be seen hopping about, in and out of the water, on every mud-bank within the reach of tide-waters. Europeans often call them frog-fish.

Periophthalmus.

ငါးစင် (ပရပ်ပွဲ၊ Tavoy.)

လဲဟဲဟဲ ကးကျီ ညှပ်ဖိုးမံ၊ ညှပ်ခွံ

CARP FAMILY.

The carp tribe has more species in these Provinces than any other family with which I am acquainted. It embraces representatives of carps, cirrins, labeo, barbels, breams, sustomus, perilamps, opsarions, bacailas, gudgeons, white-fish, and loaches.

CARP.

Buchanan says of the catla that it "differs from the common carp of Europe only in wanting cirri." The carp of our waters has precisely the same number of fin rays as the catla, and four cirri also, like the European carp; but M'Clelland adds: "It also differs from that species in the want of spinous rays in the dorsal and anal, as well as in general form. It approaches however, much nearer the Prussian carp, *C. gibelio*, the general figure, character of the fins, and number of their rays, being the same in both, but they differ in the size of their scales and proportion of the head."

Our species, although it bears a strong resemblance to the European carp, does not correspond exactly to the description of any European, or Indian species to which I can refer. It belongs to the genus *cirrinus* as defined by M'Clelland, which he says is "represented in America by the *catastomi*, and in Europe by *Cyprinus proprius*." The peculiar fleshy lips of this and the two or three species following, bear a very strong resemblance to the lips of the *catastomi* of the Ohio river. Unlike the catla the head is short, forming about one fourth of the whole length from the snout to the base of the caudal fin, and its depth about two thirds of its length.

The back which is raised like the common carp, is of deep lead colour, gradually growing lighter towards the belly, which is white; but the centre of each scale all over the body is tinged with red, of greater or less intensity, which distinguishes it at a glance from the allied species. There are forty two scales on the lateral line, and fourteen from the ventral fin to the first ray of the dorsal.

D. 18: P. 18: V. 9: A. 8: C. 19.

<i>Cyprinus,</i>		Buch.
<i>Cirrinus,</i>		M'Clell.
ငါးဖိုဖို	ဗျော့	ညှပ်ချို၊ ညှပ်ကူး

CALABASU CARP.

This is a dark coloured fish with deep blue reflections, and thick pendulous lips, like the American catostomus. It is a common fish in Bengal, and was placed by Cuvier, incorrectly however, among the barbels; by Buchanan among the carps, and by M'Clelland in his genus cirrinus.

<i>Cirrinus calabasu,</i>	M'Clell.
<i>Cyprinus</i> "	Buch.
<i>Rokita</i> "	Blyth.

ငါးနက်ဖြာ	ဗာလပဒါ	ညှပ်သူး
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NANDINA CARP.

Another of Buchanan's carps called nandina in Bengal, is sold in the bazars of Maulmain under the same native names as the preceding, although the dorsal fin is much longer. "The colour of the upper part of the body is dark green, with coppery reflections: below, it is white; the fins are dark and the eyes red." M'Clelland found it in the Bramaputra, but was not aware of its existence on this Coast.

<i>Cyprinus nandina,</i>	Buch.
<i>Cirrinus</i> "	M'Clell.

ROHITA CARP.

This species is rare in the Provinces, but large quantities are imported, dried and smoked, from Burmah Proper. Buchanan says: "It is a most valuable fish."

<i>Cyprinus Rohita,</i>	Buch.
<i>Cirrinus</i> "	M'Clell.

ငါးသိုင်း	ညှပ်ကသူး	ညှပ်ဆဲး
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LABEO.

A small scaled fish of the carp tribe, with reddish iridescent scales, and no cirri, which grows a foot and a half long, is occasionally seen in the Maulmain bazar. It has fifty eight scales on the lateral line, and nineteen or

twenty in a cross line from the ventral to the base of the dorsal fin. The fin formula is,

D. 16: P. 13: V. 9: A. 5: C. 20.

Cyprinus,

Buch.

Labeo,

M'Clell.

ငါးငြိမ်ချင်း

ညှပ်ရှေ့

MORTON BARBEL.

This is one of the most beautiful fish in the Provinces, and when removed from its own element, its burnished scales of green and yellow glisten and play in the sunlight, like a panoply of brilliants.

Length of the head to that of the body as one to four, twenty three scales along the lateral line, and six in an oblique line from the base of the ventrals to the base of the spinous ray before the dorsal. The fin rays are,

D. 10: P. 12: V. 8: A. 7: C. 20.

It appears to be a new species, for it is not described in M'Clelland's monograph of the Indian cyprinidæ, but approaches nearest *B. hexagonolepus*, from which it differs materially in the scales and fin rays, and in the general form and tints, as represented in M'Clelland's coloured figure of that species. Though common in the southern Provinces, I have never met with it at Maulmain.

The species has been dedicated to Dr. Morton, Civil Surgeon to the Tenasserim Provinces, a gentleman no less distinguished for his knowledge of the natural productions of this Coast, than for his urbanity, skill, and benevolence in his profession; and who is well acquainted with the haunts of this fish at the Sacred Lakes in the vicinity of Tavoy.

These lakes, or reservoirs, are two small currentless basins in Pagaya river, which sleep at the foot of pagoda-crowned precipices from one to two hundred feet high. The fish are held sacred by the Buddhists to those antique pagod reliques, and come in shoals to the handfuls of rice thrown them by the passing traveller, as fearless of man, as of the barking deer that quaffs of their waters.

Barbus Mortonius,

F. M.

ငါးဝတ်နိုး

မာဖျာ

ညှပ်ရွှံ

LONG-BEARDED BARBEL.

I have never seen the fish designated by the native names below, since I received M'Clelland's work on the cyprins, but the "peculiar appendages to the lower jaw," distinguishes it from all others, and there is little room for doubting the identity of the species. It is not a very abundant fish.

<i>Barbus progneus,</i>	M'Clell.
<i>Cyprinus tor,</i>	Buch.
ငါးရတ်ဝက်။	ဗာမာ။
	ညှိမိ။

TAVOY MOUNTAIN BARBEL.

This fish does not appear to have been described, and might be brought into the genus cyprinus, or carp, as described by some writers, but according to M'Clelland's arrangement it is a species of mountain barbel. It has two small cirri on the upper jaw, the dorsal fin is long with sixteen rays, and the scales are small; thirty three on the lateral line.

Orcinus.

ဗာဒါဗရ။	ညှိတုညီ။	ကးထီး။
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TENASSERIM BREAM.

I call this fish a bream, though it has a bony ray in the dorsal, because in every other generic respect it corresponds to the English bream, which it much resembles in form. The Karens call it "the peepul leaf," from its oval form. The formula of the fin rays is,

D. 9: P. 15: V. 9: A. 19: C. 19.

Abramis.

ငါးပန်းဝ။	ဗာချပ်ပု။	ညှိချပ်လင်း။
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NARROW-MOUTHED CARP.

A class of small fish that were referred to the carps by Buchanan, M'Clelland has formed into a new genus, which he calls *systemus*, from their small mouths, and of which we have several species. One is distinguished for a yellow caudal fin, edged with black.

Systemus.

ငါးဝဠာပု။	ညှိမိမိ။
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BLACK-BANDED SYSTEMUS.

Another species of systemus, with two small cirri to the upper jaw, and blackish bands on the sides, that grows as large as a barbel, is not uncommon at Tavoy. The ventral and anal fins are reddish, and there are twenty five scales on the lateral line.

Systemus.

ငါးကြင်းစောက်။ ၁၅ ဇွဲ။ ညှပ်ကွီ။

BLACK AND RED TAILED SYSTEMUS.

A handsome species of systemus, that I think is undescribed, has the extremities of the dorsal, ventral, anal, and caudal fins, of a bright scarlet colour; but the external rays of the caudal fin are deep black, contrasting boldly with the red rays. Two small barbules are attached to the upper jaw, inter-opercula black with a small black spot immediately above them, and sub-opercula tinged with red. The spinous ray of the dorsal fin is serrated, and there are thirty one scales on the lateral line, and thirteen on an oblique line from the base of the ventrals to the base of the dorsal.

D. 9 : P. 11 : V. 9 : A. 7 : C. 19.

Systemus.

ငါးနိုးငါး (ငါးတဝွန်း၊ Tavoy.) ၁၅ ဝေ၊ ၁၆။ ညှပ်ဆန်ကီ။

BLACK SPOTTED SYSTEMUS.

Another species of systemus is abundant, with the general form of the preceding, but wanting its colours, though the gill covers are yellowish, and the ventral fin slightly tinted with red. It has no barbules, and the dorsal spinal ray is not serrated. There is a black spot on the dorsal fin, and on some specimens a black band across the caudal fin. Twenty four scales are counted on the lateral line, and nine in an oblique direction across the body. In general appearance it strongly resembles M'Clelland's figure of *S. malacopterus*, but corresponds nearest to the description of *S. sophore*.

D. 9 : P. 15 : V. 10 : A. 7 : C. 20.

Systomus sophore, ? M'Clell.
Cyprinus " Buch.
 ငါးနံ၊ ငါးနံ၊ ဟာ ဖဝံ၊ ဇွာ။ ညှိဆိပ်ဝါ။

ROSE-FINNED SYSTOMUS.

Another species of *systomus*, with red-tipped fins, and without barbules, is common.

Systomus.
 ငါးနံကြိန်ဝတ်။ ဟာမာဝါ။ ညှိမံခွံ။

BLACK-TAILED SYSTOMUS.

Another small fish, from four to six inches long, with the caudal fin partly black, and hence called by the Burmese the black tailed fish, is, I think, a species of

Systomus.
 ငါးမြဲ။ ဟာဖော့ရမာ။ ညှိစရိမိန်မိန်။

BLACK-BACKED SYSTOMUS.

One species of the genus is characterized by a black back.

Systomus.
 ငါးနံဘုတ်သာ။ ဟာဘာ့ဆွံ့။ ညှိဘွန်ပွန်။

PERILAMP.

A small fish belonging to Cuvier's genus *abramis*, or bream, but which falls into M'Clelland's new genus *perilampus*, abounds here. The mouth is placed on the upper part of the head, the back straight from the head to the tail, and it appears to be nearly related to *P. perseus*, but they differ in the fin rays.

Perilampus.
 ငါးပောက်တော။ ဟာဘာ့ဒျီ။

ညှိထိပ်စူးညှိခပ်ဆွန်မိ။

SCARLET-FINNED PERILAMP.

A distinct species with reddish fins, the mouth opening upwards, and the lateral line near the edge of the belly, is common at Tavoy.

Perilampus.
 ငါးစည်။ ဟာဖာ့ရှော့။ ညှိဖိန်ဘိကဘျန်။

OPSARION.

Among our small fish of the carp tribe, is one with a greenish back.

D. 8 : P. 12 : V. 8 : A. 19 : C. 30.

Opsarius pholicephalus ?

ငါးစည်ပု၊ ညှပ်ဖိတ်။

WHITE BELLIED OPSARION.

Another opsarion, with a silvery white abdomen, and golden green back, is nearly related to one of M'Clelland's species.

D. 9 : P. 12 : V. 7 : A. 20 : C. 19.

Opsarius albulus,

M'Clell.

Cyprinus phulo,

Buch.

ငါးရင်ပေါင်းစာ၊ ဟ ဖု ညှပ်ဖိတ်။

BACAILA.

A species of opsarius resembling the preceding, with the same native names, I sent to Mr. Blyth, who said it was Buchannan's bacaila.

Opsarius bacaila,

M'Clell.

Cyprinus "

Buch.

LARGE GUDGEON.

A species of gudgeon which grows from one to two feet long, is often seen in the waters of Amherst Province. It differs from all the species described by M'Clelland, but appears to be the Tenasserim representative of the Bengal *mrigala*,* or *mirga*. The head, eyes, and mouth, with the upper jaw projecting over the under, two minute cirri on the upper jaw, and head and back green, all correspond with the Bengal fish; but there is a material difference in other respects. Our fish has thirty eight scales on the lateral line and eleven in an oblique line from the base of the ventral to the dorsal. The fin rays are,

D. 14, or 15 : P. 16, or 17 : V. 10 : A. 7 : C. 20

Gobio.

ငါးရင်၊ ဟမ္မာ၊ ညှပ်ကွီ၊ ညှပ်ဖိတ်။

* *Cyprinus mrigala*,

Buch.

RED-EYED GUDGEON.

A species of the same size as the preceding with red eyes, the back lead colour with the scales on the sides red in the centre, is found occasionally in the Salween. It appears to correspond nearest to Buchanan's *Cyprinus pangusia*, but differs in some respects, and the back is much more arched than that species in M'Clelland's figure. It is destitute of cirri, the lips are fleshy, and the intestines very long. There are forty one scales on the lateral line, and twelve on an oblique line from the ventrals to the base of the dorsal. The first rays of the dorsal and anal fins in both these species are neither flexible nor spinous, but bony. In classing them with the gudgeons, I have treated them as flexible, but should another observer consider them spinous, he will necessarily remove them to another genus. The fin rays of the two species do not differ from each other, more than individuals of each appear to differ among themselves; so that the fin rays will not serve to mark any specific difference.

D. 15. P. 16: V. 10: A. 7: C. 19.

Gobio,

M'Clell.

Cyprinus,

Buch.

ငါးချင်းချက်ပိန်း

မာဇာမာ

ညှိပိန်း

SMALL CYPRIN.

A small cyprin about five inches in length, is common in the interior. It is of a dark slate colour, with about sixty scales on the lateral line.

D. 16: P. 16: V. 8: A. 6: C. 17.

Cyprinida.

ညှိဆွဲ

CHELA.

A fish of Buchanan's genus chela, and M'Clelland's opesarius, with the dorsal fin close to the caudal, and anal fin long, is not rare.

Chela,

Buch.

Opsarius,

M'Clell.

ဂစ်ဇာင်း

မာမာမာ

ညှိဆွဲပိန်း

WHITE FISH.

A species of white fish is brought to the bazars in Maulmain, which has no barbules, and the dorsal fin is exactly over the interval between the ventral and anal. Its fin-formula does not correspond exactly to any of the species described by M'Clelland.

D. 9 : P. 14 : V. 9 : A. 12 : C. 19.

Leuciscus.

ဝါးစည်ပူ၊ ညဉ်ဖိဂ်သီး

TAVOY WHITE FISH.

I have noticed a fish in the fresh-water streams of Tavoy, that resembles a species of

Leuciscus.

ဝလူးခါ၊ ဗျာဇ္ဇာ၊ ညဉ်ဇလှိုင်ခါး

LOACH.

Two distinct species of loach in the mountain streams of the southern Provinces, I have seen, and there are probably others.

Cobitis.

ဝဇုသော၊ ဗျာဇ္ဇာ၊ ညဉ်ထာရှင်၊
ဗျာဇ္ဇာ၊ ကံင်္ဂါ၊ ထီးကံင်္ဂါ

HERRING, PIKE, AND FLAT-FISH.

The herring, pike, and flat-fish tribes are represented by, flat-bellied herrings, thryssa-anchovies, Tenassetim-sardines bristle-finned sprats, shads, chatæsi, fresh-water herrings, flying-fish, half-billed gar-fish, pikes, plagusia-soles, and brachirus-turbots.

FLAT-BELLIED HERRING.

A species of platygaster of the herring tribe, is often seen in bazar, which resembles the common herring. The mouth is entirely vertical, and the dorsal fin commences behind a very small ventral. The caudal fin is forked and yellowish, and the opercula are yellow. The fin rays are,

D. 14 : P. 13 : V. 6 : A. 4 : C. 20.

Platygaster.

ဝါးဇ္ဇာ၊ ညဉ်ဆင်ကုန်၊

THRYSSEA-ANCHOVY.

The genus *thryssa*, says Swainson, "has the general aspect of the anchovy, *engraulis*, but the body is broader, the mouth enormous, and opening almost vertical." The species then that inhabits our waters may be denominated the *thryssa*-anchovy.

Thryssa.

ငါးထန်ရွက်ငါးဖြား။

BRISTLE-FINNED SPRAT.

Another small fish of the herring tribe so much resembles the preceding, that the Burmese call it by the same name. It is, however, easily distinguished by a long filament or bristle, which is attached to each pectoral fin. Both species are often called sprats by Europeans, and they belong to the same tribe.

Setipinna.

ငါးဖြား။

ငါးထန်ရွက်။

SARDINE.

There is a small fish of the herring family at Tavoy and Mergui, which I have not examined, but Dr. Morton thinks it is identical, or nearly related to the common sardine, a fish of the same genus as the anchovy.

Engraulis meletta?

ငါးပိန်းနဲလှေ။

MALAY SHAD.

A fish of the herring family, with a deep notch in the upper jaw, characteristic of the genus *alosa*, abounds in the waters of Tavoy, and is often seen in the Maulmain bazars. It is called by the Burmese the Malay fish, and many being exported, dried, or salted from Tavoy, it has received at Maulmain the name of "the Tavoy fish."

D. 14: P. 15: V. 8: A. 23: C. 20.

Alosa.

ပရူးငါး၊ ခားဝယ်ငါး၊ ဗဟ္မဘီ၊ ညှဉ်အိမံ၊ ညှဉ်ပသဲဉ်။

RANGOON SHAD.

Another species of shad is occasionally found in the estuary of the Salween, which is said to be much more abundant near Rangoon.

D. 17: P. 14: V. 8: A. 18: C. 18.

ငါးသလောင်း

CHATÆSUS.

Some of the fish sold under the name of the Malay shad, belong to the genus *chatæsus*, characterized by the last ray of the dorsal fin "prolonged into a lengthened filament."

Chatæsus.

FRESH-WATER HERRING.

This species the Karens call the leaf-fish, from its shape. Swainson says: "It has the general appearance of a herring, and is a rare Indian fresh-water fish, considered by Pallas as a *gymnotus*, but removed by Cuvier to the herring family." It grows much larger than a herring, and abounds in our streams.

Notopterus kapirot.

ငါးဖယ်

မာဂျီလ.

ညှပ်ထပ်

ညှပ်ဖွံ့

FLYING-FISH.

The flying-fish is often seen fluttering above the waves off our coasts.

Exocetus.

ငါးငြိန်

GAR-FISH.

A handsome species of gar-fish inhabits our fresh-water streams, which in its colouring and general appearance, cannot be distinguished from the gar-fish of New England, but its fin-formula is materially different. It has light green upper parts approaching to silvery white beneath, and the caudal fin is truncated. The Karens call it the bird-fish, from its long bill.

D. 11: P. 9: V. 6: A. 16: C. 17.

Belone.

ငါးမာင်မိုး

မာ ခပ်

ညှပ်ထိပ်

HALF-BILLED GAR-FISH.

In smooth weather at the mouth of our rivers, the water is sometimes seen almost covered with a curious gar-fish, whose upper mandible is very short, while the lower is as long as the ordinary gar-fish. Its snout forms a perfect counter-part to that of the scissors-bill.

Hemiramphus.

ပင်လယ်ငါးဖေါင်မိုး၊ ဗာ ခပ် ပု မှ။ ညှပ်ထိပ်ခိပ်ထဲ။

PIKE.

I have not met with pike in these Provinces, but it probably exists, for Capt. Phayre sent Dr. M'Clelland a species from Arracan, and M'Clelland wrote in his Journal : "We have been favoured by Lieut. Phayre with two fishes from Arracan, one a species of cyprinus from the Lemgoo river, the other a kind of pike." But I am not aware that it has been described.

Esox.

TENASSERIM SOLE.

A small fish of the sole family that grows to nine inches or a foot long, is sometimes seen in bazar. It has no pectoral fins, and the dorsal, caudal and ventral fins are united, so it is a species of plagusia. The natives think that two of them always swim together, with their flat, uncoloured sides united.

Plagusia.

မွေ့ညှာ၊ ခွံာ်ညှာ၊ ထွံာ်ညှာ၊

BRACHIRUS TURBOT.

A small flat fish with the aspect of the turbot, with two pectorals, the dorsal, caudal and anal united, and of a dark grey colour on the upper or right side, is sometimes in market.

Brachirus,

Swain.

ငါးခွေးညှာ၊ ဗာ ခွံာ်ညှာ၊ ညှပ်ထွံာ်ညှာ၊

c* *

CAT-FISH.

The cat-fish, which Linnæus included in the single genus *silurus*, are very numerous in our waters. I have noticed more than thirty different species, and there are probably many others.

ADIPOSE CAT-FISH.

The cat-fish which are characterised by possessing a second adipose dorsal fin, are quite abundant. Two or three species are often called by the same native names.

Pimelodina.

ငါးတန်

SHORT-HEADED CAT-FISH.

A large cat-fish with a comparatively short head, small second dorsal fin, and a rather long anal, is often seen in bazar. It has two barbules on the upper jaw, and four on the lower.

Pimelodina (Breviceps ?)

ငါးမြင်း၊ ဗျူး၊ ညှပ်ကရီး၊ ညှပ်ရီး၊

EIGHT BARBULED CAT-FISH.

A cat-fish about a cubit long, with two dorsal fins, and four cirri on the upper and four on the lower jaw, is not uncommon.

Pimelodina.

ငါးမြင်းအုပ်တား၊ ငါးအုပ်တား၊ ဗျူးအာဂံ၊ ညှပ်ရီးစုခံ၊

MAILED CAT-FISH.

A cat-fish with a long head, and mailed to the dorsal fin, is an inhabitant of our estuaries. It has strong spines in the dorsal and pectoral fins, which are serrated on the inner sides only, and resembles in its general appearance *Pimelodus asperus*. There are four cirri to the under jaw, and two to the upper, which are united by a membrane half their length to the head.

D. 1-6 : P. 1-8 : V. 6 : A. 14 : C. 16 (*long rays.*)

Pimelodina.

ငါးဆောင်း၊ ဗျူးဝံ၊ ညှပ်ထီး၊

SERRATE-SPINED CAT-FISH.

This fish resembles the preceding, but the head is less mailed, and the spines of the dorsal and pectoral fins are serrated on both sides. The cirri and fin-formula are the same, but the upper cirri are not united by a membrane to the head. The Burmese call both by the same name.

Pimelodinae.

ငါးစောင်း

LONG DORSAL-FINNED CAT-FISH.

Another common cat-fish belongs to the section of pimelodus, which has the adipose or second dorsal fin "of such considerable length as almost to fill up the interval between the first dorsal and the caudal, while it is very low at both extremities." The first soft ray of the dorsal fin is prolonged much beyond the others. The muzzle is narrow, rounded, and has four short cirri on the lower jaw and two on the upper, equalling the length of the whole body.

Pimelodinae.

ငါးစင်ရိုင်းကွဲ၊ ဗာဒေသခါး၊ ညှပ်ဆွန်ကူးမိဒါး

FRESH-WATER CAT-FISH.

A fresh-water cat-fish, a foot and a half long, of which I have only brief notes, belongs to the

Pimelodinae.

ငါးဘိုက်၊ ဗာဒေသ၊ ညှပ်ဆွန်၊ ညှပ်သကူ

TOPSY-TURVEY FISH.

This is an odious looking, small, fresh-water fish, with the general form of the river bull-head or miller's thumb, but it appears to be a cat-fish of the tribe with a second adipose dorsal fin. The ventral fins are placed far back under the second dorsal, the head is mailed, with four cirri on each jaw; the two on the upper one are very long, and two are very short. Its abdomen is enormous, as large as that of a sea-porcupine, and the natives say it always swims on its back, and hence they call it "the back-going fish."

Pimelodinae.

ငါးနောက်သွား၊ ဗာသုတုံဒါး၊ ညှပ်လဲချွာ

LARGE SILURE.

The tribe of cat-fish characterized by the "tail and anal fin very long," contributes several species. One, which is said to grow as large as a man, has four cirri on the upper jaw and none on the lower; and the first ray of the dorsal fin is prolonged.

Silurus.

ငါးပတ်၊ ဗာဗျီ၊ ညဉ်ကပု၊

SMALL CAT-FISH.

A small cat-fish of the same tribe, has four cirri on the upper and four on the under jaw.

D. 1-5: P. 1-5: V. 6: A. 50: C. 18.

Silurus.

ငါးသံချိပ်၊ ညဉ်ဘူးသွ၊

TWO-BARBULED SILURE.

A small fresh-water cat-fish, has only two cirri, resembling *Lacepede's silure deux taches*.

Silurus.

ငါးခြင်း၊ ဗာယု၊ ညဉ်ကချီ၊

SMALL FRESH-WATER CAT-FISH.

A small fresh-water cat-fish of the genus *silurus*, from six to nine inches long, with strong spines on the pectoral fins, is very common.

Silurus.

ငါးကျေး၊ ဗာဒါ၊ ညဉ်ဆါ၊

FORK-TAILED CAT-FISH.

A small fresh-water silure, six inches long, with the caudal fins forked, is common.

Callichrus,

Buch.

ငါးနုသန်း၊ ဗာယုဒွါ၊ ညဉ်ပင်ဝါ၊

SILVERY CAT-FISH.

A small pretty silvery cat-fish, with two long cirri to the upper jaw, is often brought to the bazars in Maulmain, which the natives call by the same names as the preceding.

Silurus.

ငါးနုသန်း၊ ဗာယုဒွါ၊ ညဉ်ပင်ဝါ၊

The Karens distinguish two allied species, which the Burmese call by the same name.

အယီဖော့ဘုံ၊

ညှပ်ပန်ခိုင်ကိန်၊

အယီဖော့ဘုံ၊

ညှပ်ပန်လူး၊

LARGE BARBULELESS CAT-FISH.

A large cat-fish found in the estuaries, with two dorsal fins and no cirri, is not rare. It is said to grow six feet long, and weigh more than a hundred pounds. There are two species that are called by the same name. One with wide truncated muzzle, the other with a pointed snout.

Ageniosus.

ငါးမြင်းရင်း၊

အယု၊

ညှပ်ကရီ၊

SMALL BARBULELESS CAT-FISH.

A small species of fresh-water cat-fish is also distinguished by being destitute of cirri.

Ageniosus.

PLOTOSUS CAT-FISH.

There are several species of cat-fish with the dorsal, caudal, and anal fins united, which are called by the same Burmese names, but the Karens distinguish three species.

Plotosus.

ငါးခု၊ အဝံ့၊ ညှပ်ကိန်၊ ညှပ်ကိန်ဘိ၊ ညှပ်ကိန်ပန်း၊

CLARIAS CAT-FISH.

This is a small fresh-water fish, that differs from all the preceding, by having the caudal fin distinct, characteristic of the genus clarias. The Burmese do not distinguish it from the preceding. A specimen that I sent Mr. Blyth he said was

Clarias magony.

ငါးခု၊

အဝံ့၊

ညှပ်ကိန်ဟုနား၊ (Tavoy.)

LONG-HEADED CAT-FISH.

A cat-fish with a prolonged flat head, the snout very broad, two barbules on the upper jaw which is longer than the lower, on which there are four barbules, is called cat-fish by the Burmese.

Sorubium.

ငါးကော့ငါး၊

အဝံ့ဘဝံ့၊

ညှပ်ခွင်ခင်၊

SMALL SORUBIUM.

A smaller species than the preceding, with the same generic characteristic, is common, and other small species of pimelodinae go by the same native names.

Sorubium.

ငါးစင်ပိုင်း၊ ဗာဒေခါး၊ ညှော်ကု၊

SHARK-SNOUDED CAT-FISH.

This species has a long pointed cartilaginous snout, with the mouth opening below it like a small shark. It has two short cirri on the upper jaw, and four on the lower. There are two dorsal fins, and the dorsal and pectoral spines are serrated on both sides.

Sorubium.

ငါးရောင်း၊ ဗာဘိ၊ ညှော်ထီး၊

LARGE CAT-FISH.

A cat-fish which is sometimes six feet long and a foot wide, inhabits our estuaries.

ငါးရွှေ၊ ဗာမာ၊ ညှော်မု၊

OTHER CAT-FISH.

There are three or four other species, with distinct native names, which I have not examined beyond ascertaining that they are cat-fish.

ငါးခားလွယ်၊ (*a cured cat-fish in bazar.*)

ငါးတောက်၊ ညှော်မုံဆည်၊ (*a fresh-water fish.*)

ငါးပဝယ်၊ (*Tavoy.*) ညှော်နီကြံ (*an estuary species.*)

CARTILAGINOUS FISH.

We have no sturgeons among our cartilaginous fish, but the sharks and rays are very numerous, with one or more species of saw-fish, and torpedo.

SHARK.

Sharks are exceedingly numerous along the Coast. Between Tavoy and Mergui I have seen them gamboling

around my boat by dozens. At Mergui, large quantities of shark's fins are exported by the Chinese as a delicacy. There are several species, but I have not studied them. Gigantic fossil teeth of a species of shark are found on the Arracan coast.

Squalus,

Linn.

ငါးမန်း၊ ဗာရမ္ပ၊ ညှပ်ကမ်း၊ ညှပ်ကမ်းထီး

RHINEODON SHARK.

The natives describe to me a species like rhineodon, "with the mouth placed at the tip of the snout."

Rhineodon.

ငါးမန်းဟိုင်း

HAMMER-HEADED SHARK.

The curious shark with a head like a hammer, according to an Englishman's imagination, but like a buffalo's horned-head, according to the Burmese, is also abundant.

Zygana.

ငါးမန်းကျံ၊ ဗာရမ္ပပဂ္ဂ၊ ညှပ်မိပန်း

SAW-FISH.

A species of saw-fish, with its snout "produced into an osseous, flat, sword-shaped plate, armed with spines on the sides," frequents our waters. The bony snouts are sometimes seen two feet long, and are by some supposed to belong to the sword-fish.

Pristis.

ငါးတတ်ဝဲ၊ ဗာရမ္ပဝီ၊ ညှပ်ကပ်

SCATE.

There are several species of scate or rays in our waters, and all, so far as I have observed them, belong to that section of the tribe that has the tail armed with serrated spines.

Trigoninae.

ထိတ်ကျောက်၊ ရှပ်ပာ၊ ကးလပါ

TORPEDO.

The torpedo, or electrical fish, is said to be found on the Coast, but I have not met with it.

Torpedo ?

TORTOISE-FORMED FISHES.

Of Swainson's order the *Plectognathes*, or tortoise-formed fishes, we have representatives, in the sea-porcupines, and the fishing frogs.

FOUR-TOOTHED SEA-PORCUPINE.

This is an odious looking fish, that has the power of inflating its abdomen to an enormous size, which compels it to turn on its back. It belongs to Linnæus' genus *tetradon*, so named from each jaw being divided into two parts so as to form four teeth; and is called sea-porcupine, because several of the species are covered with spines. The species common off this Coast is perfectly smooth on the back, which is covered with bright, greenish-yellow spots, but the belly is inlaid with numerous small spines, like the thorns of a rose-tree. Authors who restrict the sea-porcupines to the genus *diodon*, would call this species square fish. It is nearly related to the American toad fish, which is deemed poisonous, but our fish is eaten by the poorer natives. The fin rays are,

D. 10: P. 16: A. 10: C. 7.

Lagocephalus,

Swain.

ငါးပုတင်း

ဗာဒွေပုတုံ.

တၢ်ဂီၤငါး

SMOOTH SEA-PORCUPINE.

The natives inform me that there is a smaller species than the preceding, which I have not seen, in which the abdomen as well as the back is perfectly smooth.

Lisomus, ?

Swain.

ငါးပုတင်းသား

ဗာဒွေပုတုံပု.

တၢ်ဂီၤငါးငါး

FISHING FROG.

An ugly little fish resembling a species of *lophius*, the angler, fishing frog, or sea devil, which I have not examined, frequents our Coast.

Lophius ?

ငါးကျောက်ခါး

ဗာဂေ့.

ညှိကမီၤတၢ် ညှိဆဲးကွေး

EEL TRIBE.

The eels are not numerous in individuals, but in these Provinces, and in Arracan there have been found nine or ten species.

COMMON EEL.

The eel most usually seen in bazar, which belongs to the genus *anguilla*, with pectoral fins, is identical with a species described by Dr. M'Clelland, from Arracan, of which "the colour above is dark olive-green or brown, and white beneath."

Anguilla bicolor.

ငါးလင်းပန်း၊ ဗျာဘုံ၊ ညှိထံ၊

OTHER COMMON EELS.

The natives describe another species resembling the above, but for which they have no distinctive name. It is probably one of three other species that inhabit Arracan, two of which, Capt. Phayre sent Dr. M'Clelland from Sandoway,

Anguilla arracana.

" *brevirostris.*

" *nebulosa.*

MURÆNA EEL.

Of the eels belonging to the Linnæan genus *muræna*, Dr. M'Clelland received specimens of one species from Sandoway.

Thærodontis reticulata.

M'Clell.

SERPENT-HEARTED EEL.

There is a peculiar tribe of eels in India which are characterized by having the heart far back in the body, like a serpent, and not near the gills, as in ordinary eels. Their general appearance too is more that of a snake than an eel, but a large opening for the gills under the throat proves at a glance that it is a fish and not a serpent. The present species was first described by Buchannan, who said it had neither fins nor scales; and this is the first

impression, but on closer examination it will be found to have scales, and narrow fringes may be seen near the tail, representing the dorsal and anal fins. It corresponds in all important respects with M'Clelland's description of *P. striatus*, but the tail is rather shorter; there are no black spots on the back, and the under parts are orange-white, interspersed with dark patches or spots, of the same olive-green colour as the back.

Pneumabranchnus striatus, M'Clell.

Unibranchapertura cuchia, Buchan.

ငါးရှဉ့် ချိခပ်. ထိတူငါး

PHAYRE'S SERPENT-HEARTED EEL.

This is a new species, more typical of the tribe than the preceding, and may be regarded as the serpent-hearted eel par excellence. Dr. M'Clelland received his specimens from Capt. Phayre of Arracan, and named the species after him. I have not identified the fish in these Provinces; but there is an eel which the natives say differs from the preceding in having a shorter head and being destitute of scales, which shows that it is either this species, or a species of ophisternon. To assist in the identification of this rare and curious species, I insert M'Clelland's description in full.

"In this singular species the intestinal aperture is placed at the posterior fifth of the length. The head is short, raised and round, larger in diameter than the body, the adjoining portion of which is, towards the head, augmented; the jaws are depressed, the upper jaw is rather more prominent than the lower, the muzzle is rounded, having two short tubular nostrils at the extremity.

"The body is not compressed, but is slightly conical from the head to near the vent; the tail from thence becomes much compressed and very narrow. The tail is emarginated with an adipose duplicature of the skin like the blade of an oar.

"The outer band of teeth on the upper jaw expands in front on either side, without meeting the opposite corresponding band, thus leaving a narrow vacant space at the apex. There are three strong branchial arches,

with slight fleshy very short pectinated gills, like the teeth of a saw.

"There are five branchial rays on each side, the first larger and stronger than the others, and isolated from them, standing considerably in front. The branchial rays are strong and bony.

"There are no scales distinguishable in the skin, even with the microscope.

"The colour above is dusky-brown, minutely dotted with brownish black, the lower parts are of a somewhat lighter shade.

"The length of the specimen is about 20 inches.

"The stomach is an expansion of the œsophagus into a long spindle-shaped, wide tube, tapering equally at either end, and contracting gradually behind into narrow intestine, which again gradually expands almost to the size of the stomach; the whole, including the œsophagus being one continuous straight tube. There seems to be no pyloric valve, the contraction of the first portion of the intestine answering the purpose of one."

Ophicardia Phayreana.

ငါးရှည်နီး ? တံတူငါး

SERPENT-TRUNKED EEL.

Another eel from Arracan M'Clelland placed in his new genus ophisternon.

Ophisternon hepaticus.

CONGER EEL.

M'Clelland says there are no proper conger eels in India, the species that was referred to that genus by Buchannan, forming the type of a new genus, which he has named murænesox, the species of which he says, "occupy an equivalent place in the East, with the congers of the Western world." There are probably several species on the Coast. Captain Lloyd met with one four feet long off the islands on the Arracan coast.

Murænesox exodontata.

ငါးသင်္ဘောပေါက်

OTHER SEA-EELS.

There are several other species of sea-eels but I have not investigated them. The natives regard them all as related to the pelagic snakes, and some say their bite is poisonous, though not fatal.

Karens in the delta of the Irrawaddy distinguish several species.

Muraenesox. ?

ခွံညှပ်လှံ၊ ခွံညှပ်ဆီ၊ ခွံညှပ်ထံ၊ ခွံညှပ်ပဲ၊ ခွံရံ၊

HERPETOLOGY.

The reptiles of the Tenasserim Provinces seem to be more generally diffused than any other section of our fauna. One of the crocodiles that we so often see sunning itself on the banks of our turbid streams, is the same species that the Egyptian was depicting on the tombs of his ancestors three or four thousand years ago. "The quick-eyed lizard, shooting through the grass,"* is the same reptile that is seen at the Sandwich Islands; and the Burmese turtle curry differs only in the cooking from the famous turtle soup, which forms so strong an attraction to the dinners of the Aldermen and Lord Mayor of London.

TORTOISE TRIBE.

The land tortoises, marsh tortoises, river tortoises, and sea tortoises or turtles, have all representatives on our Coast.

SMALL LAND TORTOISE.

A small land tortoise is very common, and Dr. Gould, to whom I sent a specimen, said it was

Testudo radiata.

လိတ်အခေါင်ဒိုး ချုံငုံငုံ ချုံငုံငုံ

LARGE LAND TORTOISE.

There is a large species, not uncommon in the interior.

Testudo.

လိတ်ချင်ချောက် ချုံငုံငုံ ချုံငုံငုံ

ARRACAN LAND TORTOISE.

A land tortoise in Arracan discovered by Capt. Phayre is

Testudo geometrica.

တောလိတ် တောင်လိတ်

* *Exopelta multifasciata.*

MARSH TORTOISE.

A marsh tortoise, according to Dr. Cantor's classification, but according to Swainson and others, a river tortoise, is very common in our streams above tide-waters, where it deposits its eggs in the sand; and is sometimes found within the influence of the tides.

Emys.

လိတ်တိုက်၊ ချိာ်ခမ္ဘာ. ချိာ်ကိး

BOX TERRAPIN.

This is a small marsh, or river tortoise, very abundant in the small mountain streams.

<i>Cistudo amboinensis,</i>	Daudin.
<i>Testudo</i> “	“
<i>Emys</i> “	Schweigger.
<i>Tortue a' boite d' Amboine,</i>	Bosc.
<i>Terrapene amboinensis,</i>	Merrem.
<i>Kinosternon amboinense,</i>	Bell.
<i>Terrapene couro,</i>	Fitzinger.
<i>Emys couro,</i>	Wagler.
<i>Terrapene bicolor,</i>	Bell.
လိတ်စောက်၊ ချိာ်လုံ. ချိာ်လား	

ARRACAN MARSH TORTOISE.

A river or marsh tortoise, which Capt. Phayre found in Arracan, was

Emys dhongoka.

လိတ်ပုတ်၊ ချိာ်ခမ္ဘာ. ချိာ်သူ၊ ချိာ်ဟ်၊

SOFT TORTOISE.

A river, or soft tortoise, is not uncommon, but I have not examined it.

Gymnopus ?

လိတ်ကျွေး၊ ချိာ်ဒပ်. ချိာ်စာ်၊

GREEN TURTLE.

The sea turtle common on our coast is identical in species with the turtle found on the coasts of America, and

in the Red Sea. This turtle burrows, and deposits its eggs in the sands near the sea-shore.

Chelonia virgata, Cuvier.

“ *midas*, Gray.

“ *fasciata*.

ဇိတ်ငြိဝံနံ၊ ဇိတ်ကျေး၊ ချိံၵဒဲ၊ ချိးစံ၊ ချိးထံ၊ ချိးစိမ၊

TORTOISE-SHELL TURTLE.

Mergui is famous for its tortoise shell, but the specimens that have fallen beneath my observation have been, if I am not mistaken, the shell of the common green turtle. Still, it is probably found on our coasts, for it is known to exist in the Malayan seas and the Indian ocean.

Chelonia imbricata, Linne.

La tortue caret, Dutertre.

Scaled tortoise, Grew.

Testudo marina americana, Seba.

Hawksbill turtle, Brown, Catesby.

Testudo caretta, Knorr.

La tuilee, Daubenton.

Caretta imbricata, Merrem, apud Gray.

Chelonia multiscutala, Kuhl ?

Chelonee faux caret, Lesson.

Chelonia caretta, Temminck, and Schlegel.

CROCODILE.

Two species of crocodile inhabit our rivers, and sea-shores, both of which are usually denominated alligators; but alligators are peculiar to America, and a glance at the scaly ridge on the back of the hind legs of the Tenasserim reptiles is sufficient to distinguish them from the alligators, which have the hind legs rounded.

COMMON CROCODILE.

The common crocodile of the Nile, the leviathan of the book of Job, is one of the species common in Tenasserim waters, and the other species is very slightly distinguished from it. Crocodiles are numerous in all our tide-water streams. During a two hours' pull up a small river, I once counted fourteen sunning themselves on the mud-banks.

They often carry off the natives, and a single animal, emboldened by his successes, will usurp dominion over a particular portion of a river, where he becomes the terror of every boat's crew that passes. The steersman occupies the most dangerous position; for the crocodile's mode of attack is to glide up silently to the bow or stern of a boat, then turn suddenly, when with one stroke of his powerful tail, close to the top of the boat, he sweeps into the water whoever is within its reach, and the stunned victim becomes an easy prey. A Karen chief with whom I was acquainted, perished in this way two or three years ago, at a point in the river Gaing, which had previously been known as the desmesne of one of these river monarchs. Persons sleeping in their boats moored to the shore, have sometimes awaked in the jaws of these monsters; and one carried off a Burman a few years ago, from the back of a buffalo that he was riding across a small stream, under the very shadows of the walls of Tavoy.

Crocodilus vulgaris, Cuvier.

“ *palustris*, Lesson.

မြောက်ဦး၊ ဘမ္မ-မ၊ သမာဏ် ကမာဏ်

SEYCHELLE CROCODILE.

One species of crocodile that I examined had “the upper jaw surmounted by two rugged ridges, each commencing from the angle of the eye.” This, then, is the species that tenants the Seychelle Islands.

Crocodilus porosus, Schneider.

“ *biporcatus*, Cuvier.

မြောက်ဦး၊ ဘမ္မ-မ၊ သမာဏ်

GECKO.

The geckos, or house-lizards, are very numerous in the Provinces, and embrace three or four different species.

FLAT-TOED GECKO.

The large gecko, which the Burmese call *touktay*, and the Malays *toke*, in imitation of the sound it makes, is very abundant. It disputes the possession of every cranny with the rats, and sometimes I think, devours their young. It has been seen making its repast on the small gecko. The

natives think it noxious, and always avoid the reptile. According to Dr. Cantor, it is the Indian salamander of old writers; and new comers usually bottle up a few individuals to send to their friends as specimens of the rare, and unknown productions of the East, not aware that it was well described, and figured by the Catholic missionaries in Siam during the reign of Louis XIV.

<i>Platydictylus gecko</i> ,	Linne.
<i>Salamandra indica</i> ,	Bontius.
<i>Gecko ceylonicus</i> ,	Seba.
<i>Lacerta cauda tereti mediocri</i> ,	Linne mus. Adolph.
<i>Lacerta gecko</i> ,	Linne.
<i>Gecko teres</i> ,	Laurenti.
<i>Gecko verticillatus</i> ,	"
<i>Salamandre ou gecko</i> ,	Knorr.
<i>Stellio gecko</i> ,	Schneider.
<i>Common gecko</i> ,	Shaw.
<i>Gecko guttatus</i> ,	Daudin, apud Gray.
<i>Lacerta guttata</i> ,	Hermann.
<i>Gecko verus</i> ,	Merrem.
<i>Gecko annulatus</i> ,	Kuhl.
<i>Gecko a gouttelettes</i> ,	Cuvier.
<i>Platydictylus guttatus</i> ,	Cuv. apud Guerin.
சொர்க்கு ரொங்கி.	கிண்டி

COMMON GECKO.

The small gecko so abundant in our houses, differs generically from the preceding species, in having the "basal joint of four or five of the toes in each foot forming an oval disk." It is identical with the gecko seen in the houses in Calcutta.

The spider of the English bible, Proverbs 30 : 28, was undoubtedly a small gecko represented by this species, and the word was so rendered in the Syriac version made in the second century, and in the Vulgate Latin made in the fourth century. Jerome translated :

"The gecko taketh hold with her hands,
And dwelleth in king's palaces."

• "Stellio manibus nititur, Et moratur in aedibus regie."

E 1*

Robinson says : "The opinion of the celebrated Bochart, that the newt, a species of small lizard, is meant, seems in every respect entitled to the preference, [i. e. to that of spider.] This reptile answers to the description which the royal preacher gives of her form and habits, and is according to the testimony of ancient and modern writers, found to take up its abode in the dwelling houses of the 'east.' There is an approximation to the truth in these remarks, yet they contain several errors. Passing over the fact that newts are not proper lizards, though supposed to be in the days of Bochart, no newts are known to take up their abodes in dwelling houses in the east. It is the gecko that takes hold with her flat fingers, and odious as are her looks, dwells even in the palaces of kings.

The word rendered "ferret" in our version, is supposed to be a different name for this same animal, and on good grounds too, for in the Samaritan Pentateuch the Hebrew word is the same in both passages.

Hemidactylus coctæi.

အိမ်ခြံ့ငှက် ကု. ၁၃. ဒီလူဂ်.

SMALL-THUMBED GECKO.

A species not usually distinguished from the preceding, with small thumbs without nails, is also common here as well as in Bengal.

Hemidactylus frenatus,

Schlegel.

" *lateralis,*

Gray.

" *quinclineatus,*

"

JUNGLE GECKO.

I have noticed a distinct species in the jungles, near Karen habitations, but never saw it in dwelling houses.

WEBB-FOOTED GECKO.

Dr. Cantor describes a gecko from the island of Ramree, with the "toes webbed to the last compressed joint."

Ptychozoon homalocephalum, Creveld, Wagler.

Lacerta homalocephala,

"

Gecko homalocephalus,

Tilesius.

<i>Pteropleura horsfieldii</i> ,	Gray.
<i>Platydictylus homalocephalus</i> ,	Cuv.
<i>Ptychozoon homalocephala</i> ,	Kuhl.

MONITORS.

The monitors or varans, commonly, but erroneously called guanas by Europeans, are represented by several species, both terrestrial and aquatic.

MONITOR CROCODILE.

More than one hundred miles above tide-waters in the valley of the Tenasserim, the streams are inhabited by a large saurian, which the natives call a crocodile, of a different species from those that are found in tide-waters. The Burmese denominate it "the monitor-crocodile," and the Karens call it by the same name they do the crocodile, but it is probably a large species of varanus.

<i>Hydrosaurus</i> ?	Swain.
<i>Monitor</i> ?	Cuvier.
ရွတ်မိကြောင်း	

MONITOR.

A large water varan or monitor, inhabits the head-waters of the Tenasserim river. I have seen individuals five or six feet long dash into the stream from the river's bank, and lash the waters with their powerful tails in great glee, their active movements contrasting strongly with the sluggish motions of the crocodiles.

<i>Hydrosaurus</i> , ?	Swain.
<i>Varanus</i> , ?	
<i>Monitor</i> ,	Cuvier.
ရွတ်ကူး	ရွတ်ကြီး
	လျှံ
	တချို့

BENGAL VARAN.

One of our smallest aquatic varans, or monitors, about two feet long, I identified with a species found in the Museum of the Asiatic Society in Calcutta, which was, if I recollect right, the Bengal varan. It is the most abundant species in the Provinces, and may be often seen in

the interior along the borders of streams, watching for its prey on the overhanging branches of trees. The Karens, who are extravagantly fond of their flesh, steal up the trees with a noose at the end of a bamboo, and often noose them while leaping for the water, or catch them on the boat which is brought under the tree. The head of this species, the natives say, is venomous, and they discard it altogether; but the flesh of the other parts, which smells most odiously, is deemed by the Karens much preferable to fowls.

Varanus bengalensis.

ဂွတ် (ဂွတ်တောင် *Tuvoy*.) (ဂွတ်ငွေ *Arracan*.)

တူးဟူင်၊ ခမာဟူ၍၊ တူ။

The Karens at Tavoy say there is a variety with a red head.

ဂွတ်မိန်၊ ခမာဟူ၍ဝဇာဝံ၊ တူးဟူင်ဂိမိန်။

TERRESTRIAL VARAN.

A monitor or varan, of a yellowish colour, the Karens call the yellow varan. The specimens I have seen are a little larger than the preceding, and it differs from it in being a terrestrial, and not an aquatic species.

Varanus.

ဂွတ်၊ ခမာ၊ တူးဘိ၊ တူးလီၤၤ။

BLACK VARAN.

According to the description of the natives, there is a distinct species of varan in the interior, which the Burmese call the black varan, but I have never seen it.

Varanus.

ဂွတ်မီး၊ မီးသိန်၊ မီးသိန်။

MAULMAIN VARAN.

There is a terrestrial varan at Maulmain, which the natives describe as distinct from the preceding.

Varanus.

ဂွတ်ညင်း၊ ခမာ၊ တူးသွန်။

LARGE ARRACAN VARAN.

A large varan is found in Arracan, which may or may not be one of these species.

Varanus bicinctatus.

ရွတ်ကုန်း

IGUANA TRIBE.

Of the family of the guanas, the principal members in the Provinces are called, by Europeans, chamelions.

BLOOD-SUCKER.

This is the tree-lizard with a gular pouch, that possesses the power in a slight degree of changing its colours, and has been regarded as a chamelion. These lizards appear in very different costumes at different seasons, which has probably assisted them not a little to the name. Many of them are seen at the beginning of the rains, of a beautiful azure of various degrees of intensity, according to the excitement of the reptile; but at the commencement of the dry season they are of an uniform ash colour. The Karens say there are two species. The one I sent Mr. Blyth was

Calotes versicolor.

ပုတ်သင်၊ ခွံ၊ ခမု၊ ခွံခိ

LARGE BLOOD-SUCKER.

Mr. Blyth suggested that we probably had a large species, but I have never identified it.

Calotes mystaceus.

DILOPHYRUS.

This is a reptile figured, and described by Dr. Cantor, said to be found at Rangoon. It resembles the blood-sucker, but has a larger crest on the head and back, and differs in the colouring.

Dilophyrus grandis.

FLYING LIZARD.

A species of flying lizard inhabits the Provinces, but it is rarely seen.

Dracunculus maculatus.

Draco

"

ပုတ်သင်၊ ခွံ၊ သိ၊ ဂ၊ ခွံသံခိ

ARRACAN FLYING LIZARD.

The flying lizard of Arracan is a nearly related, but distinct species. It has been referred to two different genera, and there may possibly be two distinct species.

Draco lineatus.

Dracunculus “

Leiolepis guttatus.

“ *revesii.*

Uromastix “

Gray.

“

SAND LIZARD.

On sandy plains, and other arid situations a sand-lizard may be often seen, which, on being approached takes refuge in its burrow in the earth. Their cavities are not deep, and the Karens, who regard them as a delicacy, frequently dislodge them.

It is a beautiful reptile, the body about six inches long, and the tail twice that length, remarkable for its powers of flight. It is of a grey colour, with shades of blue and green. It has a longitudinal band on each side from the head to the tail, of a greenish colour, sometimes inclining to blue. A row of black spots with a greenish centre down the upper parts and a few similar ones each side the marks of the back, between that and the lines on the sides. The tail has four rows of similar points, and the sides of the body and legs are marked in a like manner, but the dots are larger. There are two long sharp teeth at the front of each jaw. It has five claws on each foot, and one on each hind foot is double the length of the others. There is no collar of broad scales round the neck. No shields in the head.

Lacerta,

လဒတ်.

ရွှံ့ယဗိ.

ရွှံ့ယဗိ.

Linn.

SCINK.

This smooth, snake-like reptile is sometimes called the grass-lizard, as it may be seen darting about in the grass. It frequently enters out-houses, but is rarely seen in the interior of dwellings. There is considerable variety of colouring in different individuals, from which the Karens

distinguish three species, but they are probably all varieties of a single species, which is found from the Sandwich Islands to Hindustan.

<i>Euprepis rufescens</i> ,	Shaw.
<i>Lacerta maritima maxima</i> ,	Seba.
<i>Lacerta rufescens</i> ,	Shaw.
<i>Scincus rufescens</i> ,	Merrem.
<i>Scincus multifasciatus</i> ,	Kuhl.
<i>Mabouya multifasciata</i> ,	Fitzinger.
<i>Euprepis multifasciatus</i> ,	Wagler.
<i>Tiliqua rufescens</i> ,	Gray.
<i>Eumeces rufescens</i> ,	Wiegmann.
<i>Tiliqua carinata</i> ,	Gray.
<i>Tiliqua affinis</i> ,	Gray.
<i>Euprepis sebae</i> ,	Dumeril et Bibron.
သင်းခွာ (သင်ကလာ၊ Tavoy.)	
ပတ်သင်ခွာ ဟူ၍ ပျံ့၍၍၍	

POISONOUS SERPENTS.

Venomous serpents are quite numerous, both terrestrial and aquatic; yet during a twenty years residence, not a single fatal case from the bite of a terrestrial serpent has come to my knowledge.

ELAPS.

This is a small poisonous serpent described by Dr. Cantor as inhabiting the Provinces, but which I have not satisfactorily identified. It has a very small mouth, and rarely bites, but its venom is said to be "as virulent as that of other venomous serpents."

<i>Elaps melanurus</i> ,	Shaw.
<i>Coluber</i> "	"
<i>Vipera trimaculata</i> ,	Daudin.
<i>Elaps trimaculatus</i> ,	Merrem.

FIRE SERPENT.

The elaps is perhaps the "fire serpent" of the Karens, so called from the burning produced by its bite, which they say is poisonous, but not fatal. It is the smallest poisonous serpent in the Provinces. According to the Burmese

it has a more wonderful power of reproducing itself than the hydra of antiquity. They say if one be killed, two or three others immediately arise in its place, and a Burman, who, I believe, intended to speak the truth, assured me that he once killed one, and immediately he saw two others, close by the dead one, without being able to conjecture whence they came. Its Burman name signifies the "father of many." I have repeatedly had small innocuous serpents brought me for this fire-snake; but when I showed the natives that there were no poisonous fangs, and that no others appeared at the funeral of my specimens, they coolly replied that they were mistaken; they had not brought me the true reptile. Some of the Karens think it a species of *trigonocephalus*.

ငွေသားရောင်တံး

ဝေဘုဝဇာ ခပ် ဝဇာခပ်

ရုပ်ပုံ

YELLOW-BANDED BUNGARUS.

The bright belted bungarus, a poisonous serpent, with alternate black and yellow bands, is a splendid reptile, often seen in the vicinity of Maulmain. It grows six or eight feet long, and five or six inches in circumference. Its bite is usually deemed fatal, but I knew a Karen woman to be bitten by one in the foot, and she recovered, though after much suffering. The tail terminates in a hard bony point, which the Karens think is a sting.

Bungarus faciatus,

Schneider.

Boa

"

Shaw.

Pseudoboa

"

Schneider.

Bungarus annularis,

Daudin, Schlegel.

Aspidoclonian. "

ငနိုးတော်ကျား

ငနိုးကွက်

ဟုခပ်ခပ်

ဘိတိပ်ငှက်

WHITE-BANDED BUNGARUS.

A specimen of another species with white bifurcated bands was killed in Maulmain after making a gallant defence. All the species of this genus are furious snakes when their anger is aroused, and at certain seasons the natives say pursue their antagonists a long distance; al-

though Dr. Cantor confines this characteristic to the hamadryad.

<i>Bungarus candidus</i> ,	Linne.
“ <i>cæruleus</i> ,	Daudin..
“ <i>semifasciatus</i> ,	Kuhl, Schlegel.
<i>Aspidoclanion semifasciatum</i> ,	Wagler.
<i>Boa lineata</i> ,	Shaw.
<i>Pseudo-boia cærulea</i> ,	Schneider.
<i>Coluber candidus</i> ,	Linne.

ငနီဝါ၊ ဓာဘု ကုန်ဘိ။

DUSKY HAMADRYAD.

The natives describe a venomous serpent that grows ten or twelve feet long, with a short, blunt head, a dilatable neck, thick trunk, and short tail. It is of a darker colour than the common cobra, nearly black. I have never seen it, but the description given me accords so well with the generic characters of hamadryas, that it must be a species of that genus. “The hamadryas,” says Dr. Cantor, “is very fierce, and is always ready not only to attack, but to pursue, when opposed;” this, too, is a conspicuous trait in our Tenasserim serpent.

An intelligent Burman told me that a friend of his one day stumbled upon a nest of these serpents, and immediately retreated, but the old female gave chase. The man fled with all speed over hill and dale, dingle and glade, and terror seemed to add wings to his flight, till reaching a small river he plunged in, hoping he had then escaped his fiery enemy, but lo! on reaching the opposite bank, up reared the furious hamadryad, its dilated eyes glistening with rage, ready to bury its fangs in his trembling body. In utter despair he bethought himself of his turban, and in a moment dashed it upon the serpent, which darted upon it like lightning, and for some moments wreaked its vengeance in furious bites; after which it returned quietly to its former haunts.

Hamadryas?

ငနီပုတ်၊ ဂဒဘု(ရှေ့)၊ ဂုန်သီဘျာနိ။

BELTED HAMADRYAD.

Karens from Pegu describe a species of hamadryad with black and whitish transverse bands. It is often seen twelve feet long, by a foot in circumference, and one of my informants tells me he has seen them nearly three fathoms long, and proportionately large. It does not appear to be known in these Provinces, but the Burmese and Karens have well established names for the species; and it must be, I think, Cantor's

Hamadryas ophiophagus, Cantor.

Naja elaps, Schlegel.

" *bungarus*, "

" *vittata*, Elliot.

ငန်းသံကွင်း၊ ငန်းသံကွင်းစွတ်၊ ဂျာသီဘွီ၊

TENASSERIM COBRA.

The Tenasserim cobra differs from the described species in the marking of the hood. In the common Indian species (*N. tripudans*) the hood is figured with "a double reversed horse-shoe line of black or brown, with the two ends dilated so as to inclose an oval space, in the centre of which is a ring or spot of black."

In the Tenasserim species there is only a single oval white ring, edged with black, in the centre of which is a ring or spot of olive-green, the general color of the snake, but black on the margin. In other respects it does not differ from *N. tripudans*.

Cantor has described a species which he calls *N. larvata*—"Brownish, with numerous faint transverse stripes; the hood marked with a white ring, not unlike the form of a mask, behind which there are from three to five white rings;—the anterior part of the lower surface with alternate white and bluish-black rings." This cannot be our species, for it has none of the additional white rings behind the hood; nor on the lower surface any "transverse stripes." As these are the only Indian cobras described, is not ours a new species?

The incantation of serpents has usually been attributed to the power of music, and a late writer remarks that "it is so strange that many have denied the fact, while others

have asserted it to be a deception." "Our own conviction," he adds, "is, that serpents are extremely sensitive of impressions from musical notes, or modulations, under the influence of which they wreath their bodies from feelings of pleasure, while to these graceful contortions and undulating movements, the charmer, who plays on a pipe or some simple instrument, adapts the time."

This is the common theory,—that serpents are rendered docile by music. It must, however, be abandoned; for with many others, I have seen the cobra dance in imitation of its Burmese master, while he sat upon his haunches before it, making the motions with his body and hands that he wished the snake to imitate, and which it did perfectly, without any music whatever, or any other sound except an occasional authoritative *hay*! Again, a pair of cobras kept perfect time with their master, while no sounds were uttered, and allowed him to handle them as he wished. At his command they danced, and at his command they lay gracefully down as if asleep.

The Burmese usually put a wild one, which they secure when half or two thirds grown, with a practised tame one. These will dance and wreath themselves at their master's pleasure. Sometimes darting at him, but at that moment he straightens himself up, with his eyes fastened upon the snake's eyes, and in a gruff voice commands them to perform. Following his motions, they stand almost upright, with their hoods dilated and their colours all in play as they dance, now swift—now slow—now approaching—now receding;—and I have seen the younger in his receding moments give unequivocal tokens of desiring to make his exit; but on hearing his master's call he turned again, though evidently with more reluctance than the old actress. The power of affecting all this is certainly attributable neither to magic nor music. It must, I think, be ascribed to fear, and to a very simple principle—the power of imitation; a power possessed by different animals in different degrees. Serpents are by no means the least docile of the animal kingdom; nor are cobras the most intractable of serpents.

Although quite abundant in the Provinces, no case of a

person's being bitten by one has ever come to my notice, but I have frequently known of individuals having been bitten by the green viper, a serpent which is much readier to bite than the cobra; and one which, it is worthy of remark, the serpent-charmers do not make use of; the cobra, and the bungarus, being their favourites.

The largest cobra I have seen on the Coast measured five feet nine inches. It killed a good dog that attacked it, and was dispatched in the nocturnal melee by Mr. Ranney, who supposed he had killed a common rat-snake, until he found his dog was mortally wounded.

Naja lutescens,

Laurenti.

Coluber naja,

Linne.

မြဲဟောက်

ကဒ္ဒ.

ဂုၤသီ.

VIPER.

The natives describe a serpent whose poison they say is much more deadly than that of the cobra. It is very short and thick, and without a hood, say some, but others state that it can dilate its neck, though not to the extent that the cobra can. The description accords best with a species of viper, but I have never seen it. It is thought to be rare in these Provinces, though abundant in Burmah; and not uncommon in the neighbourhood of Martaban.

မြဲလွး

ကဒ္ဒါယွၤ.

ဂုၤမိၤသီ.

GREEN VIPER.

This poisonous serpent may be readily distinguished from all the innocuous ones of a similar colour by the head being covered with scales and not with plates. The Karens describe two species, one with a red tail, and the other with a red line down each side, but Dr. Cantor regards them as varieties of the same species. They may be often seen in trees, and their colouring so much resembles the foliage that I have had my hand drawn back by a native when about to lay it on one that I was looking for among the branches, but with no intention of touching the reptile. They appear to bite more frequently than any other venomous terrestrial serpents in the Provinces, but although the limb that is bitten always swells up to a monstrous size, and much pain ensues, yet I never

<i>Trigonocephalus gramineus</i> ,	Shaw.
" <i>viridis</i> ,	Schlegel.
" <i>erotherurus</i> ,	Cantor, (young.)
<i>Coluber gramineus</i> ,	Shaw.
<i>Vipera viridis</i> ,	Daudin.
<i>Trimeresurus viridis</i> ,	Lacepede.
<i>Cophias viridis</i> ,	Merrem.
<i>Bothrops</i> ,	Wagler.

မြွေစိုး။ ကသိပ္ပာ-ကသိပ္ပာကစော့၊
ဂုဏ်သုဏ်လါ-ဂုဏ်သုဏ်လါစိခံ။

A species of poisonous water snake abounds in our estuaries and rivers, as far as tide-water ascends. Their bite has proved fatal in every case that has come under my observation, and that too in a very short period after the wound was inflicted. The Burmese, however, tell me that persons do sometimes recover, and that bites in the rains usually prove more fatal than in the dry season. They are exceedingly numerous. At the fishing stakes, near the mouths of rivers, where I have watched the fishermen at their labours, scarcely a draught of fish was drawn up without one or two of these serpents being among them. There are several species, but I have never examined their specific distinctions ; and the Burmese call all *gyat*. One species, with a cylindrical body, the natives say never bites without producing death.

Hydrus, vel *Hydrophis*.

ကျပ်လုံး။

Another pelagic serpent, the Burmese say, has a flat body, and its bite though poisonous, may be cured by medicine. It is probably

Laticauda scutata.

ကုတ်သွား။

SLENDER SEA SNAKE.

In the delta of the Irrawaddy the Karens inform me, a water snake departs and returns with the tide that is about two yards long, but not thicker than the thumb; and the anterior part of the body is much smaller than the posterior. It is said to coil itself around every object with which it comes in contact. It is probably

Hydrus gracilus, Shaw.

ရိုးသီး

INNOCUOUS SERPENTS.

Innocuous serpents are very numerous, from the diminutive blind worm that hides itself in its burrow, to the gigantic python that displays its coat of many colors in the tree tops, ready to dart upon any animal that seeks the shade.

BLIND WORM.

The blind worm, or slow worm, belonging to the class of burrowing serpents, is not uncommon, but I have seen it dug out of its hole in the earth as often as I have met with it on the surface. The popular idea of its being exceedingly poisonous, so common in England, is still more prevalent here, and the natives are much afraid of it. When they are shown its mouth, and its inability to do injury demonstrated, they turn to the pointed excrescence on the tail, and express their confident belief that it has a sting there like the scorpion.

Dr. Cantor, who appears to have had a specimen from these Provinces, identifies it with *Typhlops braminus*, and gives the synonyms which will be found below; but our reptile differs from any description or figure that I have seen. The upper jaw projects, in a specimen before me, the tenth of an inch beyond the lower, so that the mouth opens quite below the head. The eyes are beneath the skin, through which they are seen, and the scales have each a dark spot on them, so that the general appearance is that of lead coloured spots on a dull-white ground. Lacépède's figure of *Le Lombric* represents it the nearest of any figure I have seen, but there is a horny excrescence at the extremity of the tail, with a conspicuous sharp thorn, not seen in the figure. Dr. Cantor says that of a great

number which he examined, the largest was not eight inches long ; but a specimen before me measures more than twelve inches in length, and the body an inch and a quarter in circumference.

<i>Typhlops braminus</i> ,	Daudin.
<i>L'Orvet lombric</i> ,	Lacepede.
<i>Anguis</i> ,	Russell.
<i>Punctulated slow-worm</i> ,	Shaw.
<i>Eryx braminus</i> ,	Daudin.
<i>Typhlops rondoo talooloo</i> ,	Cuvier.
<i>Tortrix russelii</i> ,	Merrem.
<i>Typhlops</i> , "	Schlegel.
<i>Argyrophis braminus</i> ,	Gray.

မြောင်ဖျက် ကေတုဂါၤ ဂျီထီးကလံၣ်

PYTHON.

A large python, usually called a boa, is not uncommon. I have seen the head of one that was killed by a drove of hogs whose whole length measured eighteen feet, and the natives say they grow much larger. The Karens have an apothegm that the largest python can swallow a full grown buck-rusa or sambar deer, horns and all, without inconvenience. They are often seen coiled up among the branches of trees, on the banks of streams in the interior, where they are frequently noosed by Karens, who regard them as valuable food. I have seen a Karen seize one nine feet long by the tail in the water, and with the aid of his associates succeed in capturing him.

According to a Karen legend, all the poisonous serpents derive their virulence from the python, which, though innocuous now, was originally the only one that was venomous. In those days he was perfectly white, but having seduced away a man's wife, aunt Ee, [Eve?] he made her, while she was in his den, weave figures on his skin in the forms which are now seen. At that time, if he bit the footstep of a man in the road, such was the virulence of his poison that the man died, how far soever that man might have passed from the bitten track. The python had not, however, any ocular demonstration of the fact, so he said to the crow: "Crow, go and see whether people die or not when I bite the foot-

track." The crow went to the neighbourhood of a Karen cabin, and found the people, as is their custom at funerals, laughing, singing, dancing, jumping and beating drums. He therefore returned to the python and told him, that so far from his efforts producing death, on the contrary they produced joy. The python was so angry when he heard this, that he ascended a tree, and spit up all his venom; but other creeping things came and swallowed it, and people die of their malignancy to this day.

The python made them promise, however, not to bite without provocation. The cobra said: "If there be transgression so as to dazzle my eyes, to make my tears fall seven times in one day, I will bite." So said the tiger,* and others, and they were allowed to retain their poison. But the water-snake and frog said they would bite with or without cause, as they liked, so the python drove them into the water, where their poison melted away, and their bite became harmless. The tree, however, from which the python spit up his venom, became deadly, and its juice is used to this day for the purpose of poisoning arrows.

The gall bladder of the python is much sought after by natives for its medicinal virtues, which are in great repute, especially among Karens. The natives say there are two or three species, but all that I have examined belong to one.

Python reticulatus,

La jaune et bleue,

L'oularsawa,

Boa reticulata,

" *rhombeata*,

" *constrictor*,

" *phrygia*,

Python amethystinus,

" *des isles de la Sonde*.

" *schneiderii*,

Coluber javanensis,

Python javanicus,

ဝါဝါဝါ ဂရဂရ.

Schneider.

Lacepede.

Bonnaterre.

Schneider, apud Dau-

" (f) [din.

Var. e Latreille.

Shaw.

Daudin.

Merrem.

"

Fleming.

Kühl.

ကဝါး

* The Karens suppose the bite of a tiger to be as virulent as a serpent's bite.

INNOCUOUS ESTUARY-SERPENT.

The Burmese describe a harmless snake, strongly resembling the venomous hydrus, and like that inhabiting the estuaries and tide-water streams. I have never seen it, but a Burman who had been bitten by one, said its bite was like the bite of a dog. He described it as about six feet long when full grown, and with a variegated skin. It must be a species of a *acrochordus*, and probably

Acrochordus javanicus.

ကုလားကောက်၊ ကနုထုံ၊

LYCODON.

A small harmless snake is common at Maulmain, with the head depressed, not very distinct, and "lighter or darker chestnut, with numerous white transversal bands on the sides forming a network composed of brown scales edged with white." It is of the genus *lycodon*, but the natives to whom I have shown specimens are not united in the name appropriated to it, either in Burman, or Karen.

<i>Lycodon aulicus</i> ,	Linne.
" <i>capucinus</i> ,	Boie.
" <i>hebe</i> ,	Schlegel.
" <i>atropurpureus</i> ,	Cantor.

<i>Coluber striatus</i> ,	Shaw?
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အိန်ကျက်မြေ၊ ကြက်ဗွဲမြေ၊ ကေဒုဝံ၊ ဂျီဆီဒို၊

STRIPED RAT SNAKE.

A species of *coluber* green-yellow on the back, with a broad black longitudinal band, interrupted at intervals, and a narrower one on each side, is often found where rats resort, on which it preys, and hence it is called a rat snake. One that dropt from the roof of my house into the dining-room on being attacked by a cat, defended itself furiously, and came off victorious. I have seen them in the act of swallowing rats twice the circumference of their own bodies.

<i>Coluber radiatus</i> ,	Schlegel.
" <i>quadrifaciatu</i> ,	Cantor.

တောကြီးလင်း၊ လင်းမြေ၊ ကေဒုဝံ၊ ကေဒုဝံ၊ — ကေဒုဝံ၊

ဆီထိ၊ ဂျီကျဲ၊

BROWN-GREEN RAT SNAKE.

Another snake, with the habits of the preceding, but destitute of its stripes, and brown-green on the back, is common throughout the Provinces.

Under certain circumstances the Burmans say the bite of this serpent is fatal. These are five: *gnang-soung, loo-soung, young-soung, lan-soung, ne-soung*.* "Snake oblique, man oblique, turban oblique, road oblique, and sun oblique." That is, if the snake approaches a man with its head askance, as this snake is always said to do, and the man look at it askance, and if his turban be put askance, and he be moving on the road askance, and the sun be askance descending in the heavens; when these five circumstances meet, if the snake bite, which by the way is always very improbable, death will certainly ensue!

Coluber korros,

Shaw.

လင်းမြီး ငန်းတောင်း၊ ကမ္ဘာ့၊ ဂျာပေ၊ စိကမီး၊

RIBBON SNAKE.

This tree snake, is grass-green all over from the head to the tail, excepting the under lips and throat which are whitish, and a white line on each side which divides the upper from the under parts, or the scales from the scuta and scutella. The skin under the scales is black, alternating with light blue, and these colours play between the scales when the snake is struck. The head is long and attenuated, and the upper jaw, which is longer than the lower, is slightly recurved with a small snout of a curved plate. There are fifteen rows of imbricated rhomboidal scales on the body, the rhomboidal form of the scales appearing most distinct on the tail.

It is probably *Dryinus nasutus*, of which I have no description, and although it differs in some respects from Cantor's description of *D. prasinus*, I presume it is a variety of the same species. The whole length of a specimen before me is four feet four inches, of which the tail is one foot six inches.

* ငန်းတောင်း၊ လူတောင်း၊ ရောင်တောင်း၊ လမ်တောင်း၊ နေတောင်း၊
ထိုငါးပါးစုံလျှင်သေတတ်သည်။

<i>Coluber nasutus</i> ,	Shaw.
<i>Dryinus</i> “	Bell.
“ <i>prasinus</i> ,	Reinwardt.
<i>Dryophis</i> “	“
<i>Tragops</i> , “	Wagler.
<i>Passerita</i> , “	Grey.
<i>Dryiphis prasina</i> ,	Schlegel.
မြိမ်းမြီးသည်။ မြိမ်းမြီး။ ဂျင်ရှပ်ပုံလ။ ဂျင်ရှပ်ပုံလ။	

VARIEGATED TREE SNAKE.

A tree snake, with a cordate head much wider than the neck and body, is not uncommon. It is covered with brownish black spots, but may be best recognized by “a dark, black-edged, arrow-shaped mark” on the head, and a black oblique streak from the eyes to the nape of the neck.”

Dipsas cynodon.

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Dr. Cantor describes a second, and nearly related species from the Provinces.

Dipsas multimaculatus.

· BUFF-STRIPED TROPIDONOTUS.

This is a small aquatic snake, with black bars across the body, interrupted by a buff-coloured, longitudinal band on each side, common in the paddy fields around Maulmain.

<i>Tropidonotus stoltatus</i> ,	Linne.
<i>Coluber</i> “	“
<i>Le chaygne</i> ,	Daubenton, Lacepede.
<i>La vipere chaygne</i> ,	Latreille.
<i>Coluber tæniolatus</i> ,	Daudin.
<i>Natrix stoltatus</i> ,	Merrem.
မြိမ်းချောမြီး။ ဂဒ်ဗွေ။ ဂျင်တရီး။	

BLACK-STRIPED TROPIDONOTUS.

This is a darker colored species than the preceding, and has an obscure black line down each side. When attacked it distends its neck like a cobra, but to a less extent, and they are sometimes mistaken for cobras. Half a dozen natives who had seen an individual display this power, would not be convinced, but the reptile was a

cobra, although they saw the snake's mouth was destitute of fangs.

<i>Tropidonotus schistosus</i> ,	Daudin.
“ <i>mæstus</i> ,	Cantor.
<i>Coluber schistosus</i> ,	Daudin.
“ <i>surgens</i> ,	Cantor.

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WATER SNAKE.

Innocuous water snakes of the genus *homalopsis*,* are very abundant. I have noticed three distinct species at Maulmain, all of which are called by the Burmese *gay-hmwey*, or water snakes, while the poisonous aquatic serpents are called *gyat*. It becomes an inexperienced observer however, not to trust implicitly to the natives, for they often handle the venomous ones as carelessly as if they were harmless; and at other times they will stone an innocuous one as if its bite were fatal. One species is of a dark grey, or olive-green color on the back; and white on the belly, with transversed black bands.

<i>Homalopsis rhynchops</i> ,	Schneider.
<i>Hydrus</i> “	“
<i>Boa moluroides</i> ,	“
<i>Elaps boæformis</i> ,	“
<i>Enhydrus rhynchops</i> ,	Latreille
<i>Hydrus cinereus</i> ,	Shaw.
<i>Hurria schneideriana</i> ,	Daudin.
<i>Coluber schneiderianus</i> ,	“
“ <i>cerberus</i> ,	“
<i>Python rhynchops</i> ,	Merrem.
“ <i>elapiformis</i> ,	“
“ <i>molurus</i> ,	“

* <i>Erpeton</i> ,	Lacépède.
<i>Rhinopirus</i> ,	Merrem.
<i>Pseuderyx</i> ,	Fitzinger
<i>Cerberus</i> ,	Cuvier.
<i>Hypsirhina</i> ,	Wagler.
<i>Hydrops</i> ,	“
<i>Helicops</i> ;	“
<i>Potamophis</i> ,	Cantor.

<i>Coluber obtusatus</i> ,	Reinwardt.
<i>Cerberus (Homalopsis obtusatus)</i> ,	Cuvier.
<i>Homalopsis schneiderii</i> ,	Schlegel.
<i>Cerberus cinereus</i> ,	Cantor.
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IRIDESCENT WATER-SNAKE.

An allied species is not rare, which is "iridescent dark greenish, or brownish olive above, the scales edged with black ; in some two parallel light grayish lines from between the eyes to the tip of the tail." It has the same native names as the preceding species.

<i>Homalopsis enhydria</i> ,	Schneider.
<i>Hydrus</i> "	"
<i>Enhydria cærulea</i> ,	Latreille.
<i>Hydrus atrocæruleus</i> ,	Shaw.
<i>Coluber pythonissa</i> ,	Daudin.
<i>Hypsirrhina</i> ,	Wagler.
<i>Potamophis lushingtonii</i> ,	Cantor.
<i>Homalopsis aer</i> ,	Schlegel.
" <i>olivaceus</i> ,	Cantor.

NAKED SERPENTS.

According to Cuvier the cæcelia tribe of reptiles are naked serpents.

CÆCELIA.

The cæcelia can be easily distinguished from an earth-worm when it opens its serpent-like mouth, but in ordinary circumstances it will be considered an earth-worm. A species with a longitudinal band on each side is quite common.

Cæcelia ?

သာမီရောက်ထောင် (Tavoy) ဝဇ္ဇကုဇ္ဇာ. ဂူယားကဝ်း

FROG TRIBE.

The Karens have distinctive names for fourteen different species of frogs and toads, but I have paid them very little attention.

TIGER FROG.

One of the largest known species of frogs in the Provinces is,

<i>Rana tigrina</i> ,	Daudin.
" <i>mugiens</i> ,	Latreille.
<i>La grenouille taureau</i> ,	Cuvier.
<i>Rana limnocharis</i> ,	Boie, MS.
" <i>cancrivora</i> ,	Gravenhorst.
" <i>picta</i> ,	"
" <i>brama</i> ,	Lesson.
" <i>rugulosa</i> ,	Wiegmann.
" <i>vittigera</i> ,	"
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TREE FROG.

Of a tree frog that I sent Mr. Blyth he wrote: "The tree frog is a species of *Polypedatus*, which I have previously received from Arracan and Assam."

Polypedatus.

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BENGAL TREE FROG.

Another species that I sent him he said was,

Hyla bengalensis, Gray.
Polypedatus ?

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TOAD.

A large toad which I have seen the Burmese doctors bringing into town, bound hand and foot, "for medicine," is not uncommon.

<i>Rufo melanostictus</i> ,	Schneider.
" <i>bengalensis</i> ,	Daudin.
" <i>scaber</i> ,	Latreille.
" <i>dubia</i> ,	Shaw.
" <i>carinatus</i> ,	Gray.

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ENTOMOLOGY.

The Tenasserim Provinces and Burmah Proper both present an untrodden field to the entomologist. A few insects have been collected, but none, with a solitary exception, have been described or noticed in any work to which I have access. Still they form by no means the least important portion of our natural productions. The lac insect, the blister fly, the honey bee, and the silk moth are important for their utility—the green beetles, the fire flies, and the butterflies, for their beauty—the white ants, the blights, and the caterpillars, for their predatory habits; and the gnats, the mosquitoes, the gad-flies, the ticks, the bugs, the fleas, the scorpions, and centipedes, for their annoyances to man.

BEETLES.

Beetles are very numerous both in individuals and species. We have tiger beetles, ground beetles, bombardier beetles, whirling water beetles, mimic beetles, stag beetles, scarab beetles, atlas beetles, chaffer beetles, chameleon green beetles, click beetles, glow-worms, fire-flies, floral beetles, blister flies, scale-like beetles, long-snouted beetles, capricorn beetles, tortoise beetles, and lady-bird beetles.

TIGER BEETLE.

Beetles are common with toothed mandibles, larger than the thorax, with ferocious habits, which have earned for them the name of tiger beetles. A short time ago I observed one leap on a cockroach four times its own size and weight, like a lion upon an elephant.

Cincindeliidæ.

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GROUND BEETLE.

A sombre species of ground beetle is sometimes very common under stones, and in similar situations, where they often congregate in large companies.

Carabidæ.

BOMBARDIER.

One or more species of bombardier beetle, which derives its name from the explosion that it makes when attacked, like a cannon in miniature, are occasionally found in the Provinces. A short time ago I seized one in my fingers, when it immediately made two or three rapidly succeeding discharges, accompanied both with smoke and a slight sound. The æriform vapour discharged blackened my fingers like a strong acid, and remained for three or four days.

Brachinides.

WHIRLING WATER BEETLE.

On the margin of every little stream in the interior, small whirling water beetles may be seen in large parties, engaged in unwearied dances over the surface of the water.

Gyrinidæ.

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DIVING BEETLE.

A water beetle, so remarkable for its power of diving that naturalists have named it the diver, is not uncommon in our fresh-water streams. Its larvæ which I have met with, is a large grub, with a pair of powerful jaws.

Dytiscus.

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MIMIC BEETLE.

I have observed a small glossy black beetle, which, when touched, draws up its limbs and counterfeits death to admiration. Its antennæ are clubbed at the end, its thorax deeply emarginate in front, and joined to the wing-cases without a scutellum; the elytra are striated and shorter than the abdomen; the abdomen is composed of seven segments, and the feet are not at their bases equidistant, the first pair being nearer together at their bases than the last two pairs. It is, therefore, I judge, a species of the hister family.

Histeridæ.

STAG BEETLE.

A stag beetle two inches in length, with deeply toothed mandibles more than half an inch long, is occasionally met with. Its large eyes are divided by the acute margin of the head, and there are two immense spines on each side of the thorax, supposed by some to be used in piercing and lacerating leaves and twigs, thus causing a flow of sap upon which the insect feeds. Another species which is more rare, has mandibles nearly as long as the whole body.

Lucanida.

EYE BEETLE.

During the hottest part of the season at Tavoy, the pedestrian is often met in his evening walks by a small insect that flies directly into his eye, like a moth to the candle. The effect is to blind the person for the instant, and after the insect has been extracted, its effects are frequently felt in an inflamed state of the eye for two or three days, and sometimes several weeks elapse ere the wound is entirely healed. On examining a specimen that was taken from my eye, I was surprised to find it a minute beetle, the smallest I ever saw. Its claws and spiny shanks are evidently the instruments with which it inflicts the pain.

Petalocera.

SCARAB BEETLE.

A brown black beetle about two inches long is very common, which resembles the insect so frequently found embalmed with Egyptian mummies, and depicted on Egyptian monuments. The elyptus is not, however, notched, nor is it a pellet roller. It selects for its burrow a bed of ordure which it excavates two or three feet deep, and at the end of the passage forms a chamber of several inches in diameter. It resembles,

Scarabæus stercorarius.

Geotrupes.

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ATLAS BEETLE.

This, one of the most remarkable of beetles, is occasionally seen, though not often. It has horns on the head nearly two inches long, armed with serratures on the inner side, two other horns curving towards each other stand on each side of the thorax, and a short one immediately over the head.

Scarabæus atlas,

Dejean.

" *hector,*

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SMOOTH HORNED ATLAS BEETLE.

Another species of atlas beetle that I have seen in Tavoy, differs from the preceding, in the horn on the head being destitute of serratures. It has a ridge down each interior margin, and one down the centre, but they are all smooth; and the horn makes a shorter curve. In the specimen before me, the horn measures from the eye to the lip, following the curve, one inch and three quarters.

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SHORT HORNED ATLAS BEETLE.

One or more species of dynastes, with a short thick horn on the head, and four small protuberances on the thorax, resembling the preceding but much smaller, are not very uncommon at Tavoy. The female of this species is destitute of horns, which is probably the case with the preceding species, but I am not acquainted with the females.

Dynastes.

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HORNED SCARAB.

A large beetle of the genus *scarabæus* as defined by Duncan, nearly related to the American *S. tityus*, is not uncommon. The female is destitute of horns, but the male has a large horn on the head, curved back, and bifid at the extremity, with two spreading points, and another of

nearly equal length, also bifid at the point, projecting from the thorax curved downwards, and nearly meeting the one on the head. There are no other horns on the thorax, in which it differs from the American species. It is of a uniform dark-brown colour approaching black. The Karens say it devours the young shoots of trees, in which it certainly resides.

Scarabæus.

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COCKCHAFER.

Beetles of which the common cockchaffer of England is the type, are numerous, and are often very destructive to the foliage of young trees. On one occasion I found the young leaves of a *Lagerstræmia indica* half devoured every morning, and yet I could not discover a single insect on it through the day, but on visiting it with a light late at night, I found dozens of a small beetle of this tribe devouring the leaves with great avidity.

Melonthidæ.

ကော့လိ. ဘော့တံ သဉ်အာဉ်အံး

ROSE CHAFER.

A rose chaffer of light brilliant hues inhabits every rose-blooming garden, where it revels in the very heart of the opening blossom, often burying itself in the centre of the bud, where it eats off the bases of the petals, so that when the blossom expands the petals immediately drop off and despoil the flower.

Cetonia

GREEN ROSE CHAFER.

A species of rose chaffer is occasionally seen that rivals in its colouring the buprestis tribe, from which it may be easily distinguished by the wing-covers being much shorter than the body. The under parts are of a copper bronze colour with green reflections, and the upper parts are of a uniform grass-green with blue reflections.

Centoniidæ.

CHAMELEON BEETLE.

"Some proudly shone
Like living jewels,
These lived deliciously on honey dews,
And dwelt in palaces of blossomed dells."

We may indeed suppose the brilliant creations of gay-coloured beetles to make their palaces in blossomed dells, and draw their own celestial hues from the "rosy lips of flowers." This changeable beetle is a species of *buprestis*, an elegant insect, with one uniform hue of variable copper and green, burnished with transparent golden bronze.

The elytra, or wing-cases of these "living jewels" are in great demand by the Sgau Karen maidens for necklaces, and chaplets, and wreathed with a few wild flowers around their ebon locks they have really an appearance of elegance.

The thorax is remarkably convex, and the surface is covered with small deep circles, or dots. There is a small tooth at the extremity of each elytra, and another on the margin a short distance removed from the extremity. The breast is produced into a strong spine, and the wing-covers are finely grained with minute convex points, all which are characteristic of *Buprestis sternicornis*, but it wants the "numerous rounded impressions, variable in size, which are filled with ash-coloured scales" attributed to that species. Symes says, the Kyens adorn themselves with the elytra of *B. ignita*. "There are probably not fewer," remarks Westwood, "than 1500 species" of this elegant genus, and they belong mostly to tropical, and sub-tropical regions.

Buprestis.

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GRIMSON AND GREEN BEETLE.

There is a still more brilliant and larger species of *buprestis*, which the Karens call the male of the preceding. The under parts are copper bronze with green reflections, while the upper parts are bright grass-green,

throwing out under different lights, blue, yellow, and golden reflections. A bright crimson band runs down each wing-cover parallel with the margin, and distant from it a little more than its own breadth, gracefully turning down at the shoulder and up at the extremity. The base of the thorax has a large spot of the same crimson colour of a triangular form, excepting that on the margin it is about the eighth of an inch wide. The thorax, and wing-covers are encased with minute points, and with about a dozen fine teeth on the margin of each of the elytra. There is no spine on the sternum, and the "head has a deep groove down the middle, and the greater part is occupied by the eyes, which are of a deep chestnut colour." It is a species nearly related to *B. bicolor* in its general form, but is a very distinct species, to which I can find no reference in my books. It is not in the fifty species described by Boitard, although he ostensibly described "des especes exotiques les plus remarquables." This species also is sought for by Karen belles for the wing-cases, used like the preceding in making their toilets.

Madame Merriam represented the larva of *B. gigantea* as a grub found under ground, feeding on roots, but Westwood says: "As it is, however, so different from the larvæ of the buprestidæ, and as in all probability, the transformations are undergone in wood, the trunks of trees, &c., I fear that the authoress must have fallen into some error." It falls to my lot to come to the aid of the lady, for the natives assure me that the transformations of these species of buprestis are undergone in the earth, and that the larva form the papery cases, with which I have often met.

Buprestis.

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SMALL GREEN BEETLE.

A smaller green species of buprestis with less brilliant iridescence is also common.

Buprestis.

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BLUE BUPRESTIS BEETLE.

A small beetle of a fine blue colour is sometimes seen, which if I recollect right belongs to this genus.

Buprestis.

CLICK BEETLE.

Among the numerous insects that fly on to the tea table in a sultry evening, may be usually seen one or more species of that curious beetle which, on being laid on his back, suddenly turns himself over with a spring and a clicking sound, which has earned for it from Europeans the name of snapping-beetle, skip-jack, spring-beetle, and blacksmith; and from the Karens, "the nodder."

Elatridæ.

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GLOW-WORM.

I have often gathered the female of a species of glow-worm in my garden at Tavoy, that bears a strong resemblance to the English glow-worm, and which shuts its lamp at pleasure, a power not possessed by the fire-fly. It is a singular fact, that while the male glow-worm is decorated with wings, and can soar up at pleasure, his mate is a wingless worm, doomed for ever to crawl upon the earth.

Lampyridæ.

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FIRE-FLY.

The fire-fly which is seen in such innumerable multitudes all over the Provinces is also a species of glow-worm, in which both sexes are winged. Our fire-flies are occasionally, but erroneously referred to the elater, or click-beetle tribe, the fire-flies of some countries belonging to that family; but those emit their light from the thorax, while ours radiate their effulgence from the last segment of the abdomen. According to the Buddhists, fire-flies were produced by the element of fire.

The fire-flies appear to sip the nectar of flowers, and to be very choice in their selection. In the mangrove swamps, and on the coast where *ægiceras* grows, that tree, while in flower will seem to be burning with their radiance, while all is dark around. In other situations, I have observed the flowers of a wild species of coix covered with them, to the exclusion of all the other plants in the neighbourhood.

Lampyridæ.

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AZURE-WINGED FLORAL BEETLE.

A small beetle, with beautiful metallic blue wing-cases with deep green reflections, a narrow orange thorax, and a small black head, is frequently seen on flowers. The cajuput oil tree when in bloom appeared to be the head quarters of this insect in my garden. While every other blossom was left quite free from them, these trees were radiant with their burnished mail.

Cleridæ.

AUGER BEETLE.

There is a small black beetle in this country, which, with its larva is exceedingly destructive to bamboos. Their ravages are dependent upon the season of the year in which the bamboos are felled. In the course of one rains they will sometimes utterly destroy a dwelling, the bamboos of which had been felled in the preceding dry season, while others that had been felled about the close of the rains, I have known to stand unharmed by insects for seven years.

Bostrichidæ ?

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BLISTER FLY.

A species of blister fly is not uncommon, and its vesicatory power is well known to the Karens, who say it shows a partiality for the papilionaceous flowers of one or two plants of the bean tribe.

Cantharidæ (Mylabris ?)

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SCALE-LIKE BEETLE.

Some evenings during the dry season, the table will be covered with a curious flattened insect resembling the scale of a fish. It is of a grey colour like the bark of a tree, and the margins of the wing-covers and the thorax are "extended into a flattened shield all around the body." One individual, that I recently examined, had on its under side more than twenty small lice, parasites.

Cossyphus

LONG-SNOUTED BEETLE.

This country seems to be the rendezvous of weevils, or beetles with long snouts. Many are of large size, and of very curious forms. One large species may be always found in the stumps of trees, recently felled.

Curculionidæ.

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MANGO WEEVIL.

A small black beetle of the weevil tribe makes great havoc among the mangoes on this Coast. The perfect insect, sometimes two of them, may be often seen walking out of a mango that has been unsuspectingly dissevered.

Curculionidæ.

CAPRICORN BEETLE.

A large capricorn beetle often flies into the houses at Maulmain, which is more than two inches long, with antennæ upwards of three inches in length, each consisting of ten joints, coated with sharp thorns. There is a large thorn on each side of the thorax, and another, not quite so large, on each shoulder, on the corners of the wing-covers; which are embossed for about a sixth of their length with minute black tubercles, or thorns, and they have a spine at the apex of each. In form, and general appearance it resembles *Hammacherus marmoratus*, but it has not the variegated coloring of that species. The brown wing-covers, with a spine to the apex of each, assimilate it to *Prionus corticinus*, from which, however, it differs in others respects.

Prionidæ.

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EDIBLE GRUB.

An odious looking grub is eaten by the Burmese, and regarded by them as a great luxury. If I am not mistaken, it is the larva of a capricorn beetle, the same tribe that is supposed to have furnished the cossis of Pliny, which was regarded as a delicacy by the Romans.

Longicornes.

SCULPTURED CAPRICORN BEETLE.

A small capricorn beetle about an inch long, with elegant chased lines on the wing-covers, is not uncommon. There are four spines on the thorax, one on each corner, and the antennæ, which are shorter than the body, are very slightly serrated. It is of a reddish brown colour, and dissimilar to any species that I can find described.

Longicornes.

MUSK BEETLE.

A handsome insect belonging to the family of the musk beetles, emitting a slight odour, is occasionally seen. It may be readily distinguished by its plume-tufts on the second joint of each antennæ. The ground color is black, marbled with rich spots of brown, and the thorax or breast is spined.

Cerambycidæ.

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TORTOISE BEETLE.

Among other species of tortoise beetles seen in the Provinces, is one with the form of *Cassida six-pustulata*. It is a perfect tortoise in miniature; the upper parts are amber colored, and translucent, with seven black spots on each wing cover, three down the centre, and two on each margin, so as to form transverse rows. The centre of the thorax is also black. The specimen before me covers a perfectly circular space half an inch in diameter, but it is not a perfect hemisphere, its altitude being only about a quarter of an inch.

Cassida.

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is smaller than either of the preceding, and may be often seen on flowering plants, watching in the branches, to pounce like a cat upon the insects that frequent the flowers; for they are among the most carnivorous of insects, notwithstanding their reputation for sanctity. One old writer says: "So divine a creature is this esteemed, that if a child ask the way to a place, she will stretch out one of her feet and show him the right way." And the celebrated Xavier, it is said, "seeing a mantis moving along in its solemn way, holding its two fore legs as in the act of devotion, desired it to sing the praises of God, whereupon the insect carolled forth a fine canticle."

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PHANTOM INSECTS.

This is the most extraordinary tribe of insects known. There are none in England, but forty species have been collected in India and China. They are called leaf-insects, walking-stick insects, straw-insects, spectre-insects, and the like. I have noticed quite a number of species in the Provinces, the most remarkable of which are the following :

WALKING-LEAF INSECT.

An insect that cannot be distinguished at first sight from a green leaf, two or three inches long, is sometimes seen in the interior, but is not common. I sent a specimen to a scientific society in America, but the curators never reported on it; and I am therefore unable to say whether the species be new or not. The natives have no name for it, inasmuch as they believe it to be a true leaf, changed to an insect.

In this belief they are only a few years behind ourselves. Westwood says: "Bradley, although a F. R. S. described and figured two species of *Folium ambulans* (as he termed these walking-leaf *Phasmidæ*,) and informs us that the insect is hatched from eggs deposited in the buds of trees, at the time the buds begin to shoot. The insect is there nourished by the juices of the tree, and grows together with the leaves till its body is perfected,

and at the fall of the leaf drops from the tree, with the leaves growing to its body like wings, and then walks about !”

Phyllium.

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WALKING-LICHEN INSECT.

I have occasionally met with an insect precisely resembling a bit of dried lichen, both in form and colour. It is probably a new species, for there is nothing like it described in any of the books to which I can refer.

Phyllium.

WALKING-STICK INSECT.

There is a curious walking-stick insect, nearly a foot long, resembling a bit of dried stick, not very uncommon in the province of Tavoy. It is probably *Bacteria sarmentosa*, which Westwood describes from Assam. His specimen was ten inches and a quarter long, and he says, “this species of walking-stick insect is longer than any which I have yet seen.”

Bacteria sarmentosa?

FIELD CRICKET.

The *Achetidæ* crickets are numerous. Several species of field crickets are abundant, and they often fly about the lights at evening, but the geckos effectually prevent them from domesticating by usurping the places that crickets usually appropriate to themselves, and by devouring every one they can discover

Achetidæ.

ခါဂံၤ.

သကံၤသွပ်

MOLE-CRICKET.

The mole-cricket is very abundant in the Provinces, and the natives say, that it often does much injury to the paddy, by burrowing among its roots. Some writers have endeavoured to prove that this insect is not herbivorous, but waving that question, the fact of its burrows being near the surface of the ground, is sufficient to make its presence injurious to the growth of grain.

Westwood remarks: "They stridulate with a dull, low, jarring note, continued for a long time without interruption." In low, damp situations, their singing at evening, during the dry season, is quite stunning.

Acheta.

ဘုံပဝ်မၢ်ၤၤ. ကဝ်းစုး

GRASSHOPPER.

The grasshopper in common usage denotes both the grasshopper and locust; but Westwood restricts the race to that section of the tribe which have long slender antennæ and the ovipositor of the females exerted.

As thus restricted, we have numerous species of grasshoppers, some of which have large green wings, veined like the leaves of trees, which they much resemble. One species, about three inches long, with large wings, unlike others that I have captured, stridulates long and loudly in the hand.

မုၢ်ဇာင်း. ဂွံ—ဂွံ. ဂွံၤ

LOCUST.

The locust tribe as defined by Westwood, includes all the grasshoppers, the females of which are destitute of an exerted ovipositor, and which have "the antennæ short, filiform, and with twenty or thirty joints."

We have several species of grasshoppers belonging to this tribe; and I think I have seen one species of migratory locust in the Provinces. The Karens, who have a distinctive name for it, say that it only appears occasionally, and so far as I can recollect, it appeared to me identical with a species that occasionally appears in Bengal, of which I saw specimens in Calcutta.

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TRUXALIS.

A species of grasshopper, with a peculiar "elongated pyramidal-shaped head," is not uncommon.

Truxalis.

မုၢ်သတၢ်

NERVE-WINGED INSECTS.

The nerve-winged insects are represented in the Provinces by the termites, or white ants; damsel flies, or dragon flies; and ant lions.

WHITE ANTS.

The traveller in British Burmah is frequently treading over mines of white ants, or termites, as they have colonized almost every part of the Provinces; but their depredations are perhaps not as incessant as might be anticipated from their bad reputation of being "the most absolute pests of mankind." My study-table stood for several years within a few inches of a post tenanted by myriads, yet they never disturbed it. Occasionally I made a small incision in the post, when on listening, I could immediately hear a thousand little taps within—the battle-roll of sentinels beating to arms, and almost instantaneously, whole regiments would appear with enormous sickle-shaped jaws to defend their fortress. They do not usually, however, remain thus pacific, and unless the timber be impervious, they tunnel their way from room to room, from basement to attic, devouring chests of apparel, linen, books, or whatever impedes their course. On their foraging expeditions, they frequently attach themselves to the exterior of a post, and arch their pathway up to the roof, the destruction of which they silently and speedily effect.

At their seasons of pairing, about the commencement of the rains, they take wing, and emerging from their dens at evening, come pouring into the bungalows, covering persons and tables, so that the occupants are compelled to forsake studies and pleasures, and retreat to the darkest corners.

This annoyance, however, is mitigated by the geckos which come to the feast, and devour every one that drops its wings. The natives too, afford help by catching them, which they do by the pint, regarding them a luxury.

The architectural labours of these social insects display great artistic beauty, and variety. A metropolis of theirs was exhumed near my residence in Maulmain, the exterior of which appeared only like a large mound, not more than six feet high, but more than forty feet in circumfer-

ence, with here and there a small circular vestibule visible through the turf-covered bastions, or a low spiral turret protruding above the oval vault. Within, were thousands of edifices with multiform compartments, surrounded and connected by labyrinths, domes, and portals; while beneath, curious stair-cases led down long winding corridors, through innumerable multilocular caverns—the whole series presenting the aspect of continuous stories one above the other, like city piled on city. Leading from this subterranean town in almost every direction, were hunting paths, arched and tunneled, extending across the road, and to distant parts of the compound.

The form of government existing among these insect bodies politic, is not despotic like that of the hive bees, nor republican like that of the processionary caterpillars, nor is it an aristocracy like that of the humble bees, but a sort of limited monarchy, with four principal orders—the royal family, the army, the labourers, and the fliers. These grades seem to be as distinct, and their occupations as different, as that of the four prime castes in Hindu society.

When the Karens laid open the stone-like masonry of their city, it was amusing to observe the instinct movements of these different orders. In the centre was the imperial chamber, or presence-room, with the queen-mother in close imprisonment. Here royalty was surrounded by its court, and the palace chamber was many thousand times larger than the halls of the subjects, for the queen was so distended with eggs that she measured three and a half inches in length, and an inch in breadth. The workers were all busy, some enlarging the apartments, some tending upon the larvæ and pupæ, and others returning from hunting exploits with stores of provisions. The soldiers only were idle, but no sooner did the pickaxe effect a breach in their walls, than the alarm spread with telegraphic speed, and in a moment myriads of furious warriors were on the march from story to story, rushing on to the aid of the few who were bravely disputing the entrance of the foe. Nor did these sturdy troops cease to fight for their queen until the belligerents withdrew,

when each division retired within the citadel, and hosts of labourers came forward to repair the walls.

Termitidæ.

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DAMSEL FLY.

We not only have Moore's "beautiful blue damsel flies," but we have them also green, red, and yellow. They are often called horse-stingers, and dragon flies. Their habits of preying on gnats, and other small insects make them very welcome companions in the jungles; and it is on the borders of water-courses in the interior that they are seen in their beauty and variety. This is one of the few insects which the Karens recognize in its larva state; and they often point out the larva in the water, which bears a distant resemblance to the perfect insect, but the body is shorter and thicker, and their wings are only rudimentary.

Libellulidæ.

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ANT LIONS.

In sandy situations holes may be often seen in the form of inverted cones which are the pit-falls of the ant lion. On close examination a pair of large tusks may be seen peeping up at the apex of the cone ready to seize upon any unfortunate ant, or other small insect that may tumble into the snare. This, however, is the insect in its larva state. In its perfect state it resembles the dragon fly, but it is rarely seen.

Myrmeleonidæ.

GAUZE-WINGED INSECTS.

The *Hymenoptera*, or gauze-winged insects, have legions of representatives in the Provinces in the form of gall-insects, ichneumon-flies, sand wasps, mason wasps, stinging ants, common ants, wasps, hornets, carpenter bees, honey bees, and dammer bees.

Gall insects are numerous, but the most remarkable that I have seen in the Provinces are found on the leaves of a species of terminalia.

Ichneumon flies, characterized by depositing their eggs in the bodies of other insects, are occasionally seen.

One or two species of mason wasps abound, and elaborate their tenements several inches in length to the legs of tables, book-cases, the sides of partitions in our bungalows, and sometimes in key-holes. These curious galleries are constructed of clay, which the insect kneads to a proper consistence with its mandibles; and when the clayey portals are removed, the cells are found filled with caterpillars, walled up for nourishment for their larvæ.

They are industrious insects, and will reconstruct quite a long series of cells in three or four days; but it is the female only who is entitled to this honor. One would suppose it might be her share to weave the silken tapestry for her apartments, but besides this she builds all the walls, while her mate sits by in sheer indolence, like a lazy Burman while his wife rows the boat.

I have frequently examined these nurseries on the partitions of my study. They sometimes consist of ten cells, with clay stucco walls about a quarter of an inch thick. Each cradle is about half an inch broad, an inch long, half an inch high, and lined with silk that rivals in texture the finest damask.

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We have several species of solitary wasps, that excavate their habitations in sandy banks.

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STINGING ANT.

Stinging ants, as they are denominated, are very common, and their sting quite insufferable. They are not, however, ants, but a tribe of sand-wasps, the females of which are destitute of wings.

Mutillidæ.

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ANT.

Ants, as in all tropical countries, abound both in numbers and species. The Karens distinguish a dozen different classes.

Formicidæ.

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EDIBLE ANT.

A species of ant is very common which constructs its nest in trees, formed of leaves united together with a papery substance, that the insect itself fabricates. The nests are sometimes a foot in diameter, and the ants are considered quite a delicacy with the Karens, who eat them in their curries. They are said to be very sour.

တၢ်သုး

WASPS AND HORNETS.

Wasps and hornets of the Linnæan genus *sphex*, as in most countries, are represented by several species.

Vespidæ.

CARPENTER BEE.

The females of two or three species of carpenter bees may be frequently seen excavating their cells in the cavities of bamboos, or chiselling for themselves tunnels in decayed wood. When the shaft is sufficiently deep, they deposit their eggs, and balls of nutriment for the grubs; then floor over the orifices with mud, and lay again, and so continue to do until they have deposited all their eggs.

These insects fly into houses, and Europeans call them bumble bees, but they belong to a tribe of solitary bees, of which no species are found in England.

Xylocarpus.

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TREE BEE.

The domesticated bee is not found in the Provinces, but there are several wild species that build in trees, and from which a considerable supply of honey and beeswax are obtained annually. One species constructs its nest "in the shape of a large pear," which indicates a relationship to the genus *trigona*.

Apis.

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DAMMER BEE.

There are several other species of bees that are characterized by building their nests in the cavities of trees. The wax of one species is dark colored, of the consistence of resin, and is much used by the Burmese in calking boats. It is constantly seen for sale in the bazar, and Europeans generally regard it as the resinous product of a tree, or dammer. So Dr. Helfer considered it, and recorded it, "a kind of balsamic gum-resin."

Meliponæ

ခွါ။ ခွါ။ ကွဲ။ (*The insect.*)

ခွဲခက်။ ခွါ ဖံာ် ဗွဲ ဗံာ် (*The hard wax.*)

ကွဲကိုးဆီး။ ကွဲကိုးဆီး။ "

BUTTERFLIES.

When a person dies, the Burmese say, the soul, or sentient principle, leaves the body in the form of a butterfly. This too was the faith of the Greeks more than two thousand years ago. "Among the ancients, when a man expired, a butterfly appeared fluttering above, as if rising from the mouth of the deceased." The coincidence is the more remarkable, the closer it is examined. The psyche, or soul of the Greeks, represented by the butterfly, was the life, the perceptive principle; and not the pneuma or spiritual nature. So the Burmans regard the butterfly in man as that principle of his nature which perceives, but not that of which moral actions are predicated. If a person is startled, or frightened so as to be stunned for the moment, they say, "his butterfly has departed." When

a person is unconscious of all that is passing around him in sleep, the butterfly is supposed to be absent; but on its return the person awakes, and what the butterfly has seen in its wanderings constitutes dreams.

The Greeks and the Burmese, undoubtedly derived these ideas from a common origin. In the Buddhist legends of the creation of man, which originated in Central Asia, it is stated that when man was formed, a caterpillar, or worm was introduced into the body, which, after remaining ten lunar months, brought forth the living man; and hence the reason why a butterfly is supposed to leave the body at death. Thus the caterpillar, or larva state; the pupa, or chrysalis, and the imago, or perfect insect, are, to the Buddhist, representatives of man in his origin from the earth, in his subsequent conception in the womb, and in his perfect state as a sentient being; while the successive changes typify his endless transmigrations.

This is a wonderful land for butterflies. Birds of passage are common in most countries; but butterflies of passage are nowhere on record. Yet such are sometimes seen in Burmah. Westwood says: "Various species of butterflies are remarkable for their periodical or irregular appearance; of these the species of *colias*, or clouded yellows, are pre-eminent." It is remarkable that butterflies of this same tribe of "yellows" often appear in clouds in Burmah, and pass over the country in flocks, like the pigeons that annually migrate over Kentucky, and other western states of America.

An intelligent Karen writes me: "In the neighborhood of Rangoon, at harvest time, or a little before harvest, immense numbers of butterflies appear, some years coming up from the south and passing on to the north. They migrate each kind by themselves. Yellow butterflies, for instance, will pass for two or three hours; and after they have all disappeared, greenish-yellow ones arrive, and pass on like the first; and after them, black ones come and pass away in the same manner. Sometimes yellow ones alone will appear, and sometimes none but black ones." The season before the English took Rangoon large quantities of butterflies migrated over the country

in this way, and many of the natives therefore augur, that their appearance is ominous of wars in some parts of the earth, if not in their own country. Others say that they indicate high waters the following season, but my informant remarks that he observed them twice without being able to discover that they portended any thing.

Caterpillars also appear periodically, and probably the same years that the butterflies are so abundant. A Pegu Karen from the delta of the Irrawaddy, informs me that at intervals of a few years, caterpillars appear in their paddy fields in immense numbers. They move over the country, devastating like a regiment of septendecenary cicadæ, devouring plants down to the roots, grass as well as paddy, though they do not long quarter themselves upon one locality, but move on like an army, being found every day a few miles in advance of their former position.

PRIAM BUTTERFLY.

One of the handsomest butterflies that I have noticed, is, I think, the male priam butterfly. The anterior wings are black, chased with green lines, and the posteriors green, variegated with black. It is of large size, but is rarely seen.

Ornithoptera priamus?

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PIERIS.

One of the most abundant butterflies at Maulmain has dark upper wings approaching black, but the under sides of the posterior wings are brightly figured with red and yellow. It belongs to the genus pieris, as defined by Duncan, and may be distinguished from related genera by the under pair of wings embracing the abdomen.

Pieris.

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CABBAGE BUTTERFLY.

Large flocks of small yellow butterflies may be often seen in gardens throughout the Provinces, and single individuals almost every where. I have noticed them

in great numbers where the Karens cultivate mustard. It is either identical, or nearly related to the common cabbage butterfly.

Pontia.

ထိပ်ဖြာဝါး ဂျာလံဟ်ပျံဒဲး မိကပူဒါး

WHITE BUTTERFLY.

A white butterfly passing into a light blue straw colour, the margins of the upper wings tinged with black, is very common. An allied species has the wings bright yellow near the body, with the other parts whitish. These, with some others that may be seen throughout the Provinces, belong to the same tribe which furnishes the common garden butterflies in England.

Picrides.

ထိပ်ဖြာဖြူ ဂျာလံဟ်ပျံဒဲး မိကပူဝါး

BLUE BUTTERFLY.

I have observed a beautiful blue butterfly at Maulmain, whose wings stand perpendicular when at rest.

BLACK BUTTERFLY.

A black butterfly with a broad yellow band across the wings is occasionally seen. The wings are triangular, and while in repose declined below a horizontal line.

BRUSH-FOOTED BUTTERFLY.

This name is applied to a handsome tribe of butterflies, but I am best acquainted with the larvæ of some of the species which are covered with spines, and hairs that sting with intense severity. A person has only to seize one of these caterpillars once, to make him careful about handling such insects ever after.

Nymphalidæ.

HAWK-MOTH.

Hawk-moths or sphynxes are common, but they are noticed most in their larva state. They are furnished with a horn or sabre on the hind part of the body, and often take the attitude of the famous sphynx, and appear to threaten any one who dares to touch them.

Sphingidæ.

HORNET-HAWK MOTH.

A moth is seen flying in the dusk of evening of the same tribe as the hornet-hawk moth. It may be distinguished by its plumed antennæ.

Egeriidae.

SILKWORM.

The silkworm is not, so far as I know, reared in these Provinces, but it is in many parts of Burmah, both by Burmans, Karens, and Kyens. The latter tribe is said to have the art of raising the worm and of making better silk than either the Burmans or Karens; and the Burmese, who manufacture large quantities of silk fabrics, are said to purchase the principal part of their raw silk from other tribes. The silkworm, I am told by a Karen, is not fed on the leaf of the mulberry, but on the large leaf of a cruciferous plant.

It may possibly be the *Eria* silkworm, *Phalæna cynthia*, which is fed on the castor-oil plant. It is a common error to suppose that all silkworms live on the leaves of the mulberry tree. The Tusseh silkworm, *Saturnia paphia*, is said to feed in the wild state on the jujube tree, *Zizyphus jujuba*; the silk cotton tree, *Bombax heptaphyllum*; and *Terminalia alata*. The Joree silkworm, *Bombyx religiosa*, is fed on the peepul; and the Malda silkworm, the cocoons of which are mixed with those of the *Eria* silkworm, is found on the mango tree.

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ATLAS MOTH.

The atlas moth is one of the largest insects of the moth tribe known. The smallest specimens I have seen measured from eight to nine inches in the expanse of its wings, which were pencilled with the richest umber, brown and yellow, and bordered with magnificent ocelli. This moth belongs to the silkworm family, and until recently was known to entomologists only as a native of China; but it also abounds in these Provinces. Efforts being made to raise the insect in England, the eggs are sometimes sent home in letters, but Hope, the great English

entomologist, writes: "Send larva placed in mould," and the eggs would be much more likely to retain their vitality were they shipped in the same manner.

Saturnia atlas.

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WOOLLY-BEAR.

Some years, black, long-haired caterpillars, called woolly-bears, abound to such an extent that they are very troublesome in houses; and their hairs when they touch the skin produce considerable irritation. One year they were so numerous at Tavoy, that a gentleman was obliged to destroy a large heart-leaved fig tree that he much valued for its shade, as the only means of escaping the nuisance. They are sometimes so abundant in the forests that the natives in passing through the low shrubbery find themselves covered with them, and their limbs are often inflamed, and swelled by the hairs of these caterpillars entering the skin.

In the perfect state the woolly-bears are a tribe of moths which include the tiger moths. I have never observed the moths in great numbers, but an occasional one may be seen at evening. The salt-marsh caterpillar of New England belongs to this tribe.

Arctiidae.

NIGHT-MOTH.

Night-moths with their antennæ simple, are very numerous. Two or three small species with their wings deflexed in repose, and forming a triangle with the body, are most abundant.

Noctuidæ.

GEOMETRICIAN.

The caterpillars, called loopers or geometricians, from their measured step, are well known, and are often seen in our gardens. In the perfect state these caterpillars are moths, some of which are called carpet-moths, from the veining of their wings resembling mosaic.

Geometridæ.

ERMINE MOTHS.

A few elegant little moths, covered with metallic scales with black markings on a silvery ground, called sometimes ermine moths, are common.

Yponomeuta.

PORTABLE-CASE CATERPILLAR.

The larva of a minute moth is often seen bearing about on its back the case it inhabits. A gentleman lately called to show me a minute insect with two feet, which walked erect! On applying a magnifier it was seen at once to be one of these small caterpillars with its house on its back, like a resuscitated man bearing his own coffin.

Yponomeutidæ.

MINING CATERPILLAR.

I have observed in gardens, both at Tavoy and Maulmain, that no sooner had the large flowered, and large-leaved crinum* done flowering, than a mining caterpillar is seen at work beneath the epidermis of the leaf. If left unmolested, they increase as if by magic, and in a few days the whole of the leaves attached to the plant, some of which are two or three feet long by four or five inches wide, are entirely eaten down to the stem.

It appears to be made for this plant, for it does no injury to others, and disappears as soon as the leaves are all devoured. I have never seen the perfect insect to recognize it, but it is probably a moth.

Yponomeutidæ.

LIKE WINGED INSECTS.

The *Homoptera*, or like-winged insects, embrace several that are very unlike each other, as the cicada, the lantern-fly, plant lice, and the lac insect.

CICADA.

Those famous singers, the cicadæ, celebrated by Homer, Virgil, and from the ancients down to the present time, are numerous both in individuals and species. One of the first objects that attracts the attention of an observer in some

**Crinum orationem.*

localities of the Karen jungles, is a clay tube several inches high, raised over a shaft sunk two or three feet in the ground, over which may be often seen a Karen, bending and inserting the extremity of a long branch of a thorny ratan, which after a few twists is withdrawn, bringing with it a grub that is deemed a great luxury.

The natives have a distinct name for the grub, and seem to be ignorant that it is the larva of the cicada. This I was enabled to verify on one occasion by observing the exuvæ of many of their pupæ adhering by claws to the serrated bark of trees, with rents in their backs out of which the perfect insect had escaped. The Karens, it may be observed are no more barbarous in their taste than the civilized Greeks, for Aristotle testifies that they were an article of diet, both in their larva and perfect state, and one species is still eaten by American Indians. The most common species is small, and often flies into dwelling houses.

Cicadidæ.

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တူၣ်ထီၣ်. တၢ်ထညၣ်.
ခွဲၣ်မၤ. ဗဒ္ဒါမ္ဗါၤၤ. ပံၤမိၣ်. (*Larva state.*)

LARGE CICADA.

A large cicada, the Karens say, ushers in the dry season with its noble song.

ဗဒ္ဒါမ္ဗါၤ. သံၣ်မိၣ်ခွဲၣ်.

GILDED CICADA.

A cicada, gilded with a bright yellow transverse band on its wings, is occasionally seen. The Karens say its call is "Kau-wee, kau-wee," and this is the name by which it is known to them. I was one evening serenaded by one that poured out its vesper song from a jack tree before my door, in strains loud enough to have startled one unacquainted with the musician. Its sounds were full, shrill, and continuous, swelling up like an Æolian harp so as to fill all the air around.

The instrument on which this gay minstrel performs, is a unique piece of mechanism,—a perfect melodian

possessed only by the male, and which he carries about between his abdomen and hind legs. It consists of two pairs of plates composing a shield for the box concealed beneath. Under these plates is a delicate iridescent covering tensely stretched over the cavity like the head of a drum; and attached to its inner surface are several muscular strings, secured at their opposite extremities to another membrane at the posterior end of the box. The music is produced by the alternate contraction and expansion of these strings, which draw the tense concave covering downwards, with a rapid receding, the sounds issuing from two key-holes of the instrument, strikingly analogous to the action of the melodian.

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LANTERN-FLY.

I have noticed several species of the curious fulgoræ, but they are not common. An American species was formerly supposed to emit a bright radiance from its head, but modern observers have not confirmed the statement. I have not noticed any luminosity in our species. A specimen before me has a rostrum an inch in length, as long as the body, ascending at the top, and of a brown color. The fore wings are brown for about half their length with reddish veins, and transverse silvery bands, the last interrupted. The latter half of the wings have the same red veins on a lighter ground, with a few silvery spots. The whole of the markings in form bear a striking resemblance to *F. Spinolæ*, but of a different color. The posterior wings are light straw color, tipped with black. The expansion of the wings nearly three inches. It appears to be a distinct species, representing the *F. oculata* of Penang, and the *F. Spinolæ* of Assam.

Fulgora (Hotina.)

PLANT LICE.

Plant lice are often very destructive to our gardens, especially to sickly plants. They are not usually, I think, the aphidæ of Europe, but the cercopidæ. The ants, however, manifest the same affection for them, and make like

efforts to obtain their honey-dew. One species may be seen covered with a frothy secretion like the common "frog-hopper," *Aphrophora spumaria*.

Cercopida.

WOOLLY BLIGHTS.

Some species which do not secrete honey-dew are of a large size, clothed with a white, cotton-like covering, and when disturbed they have the habit of leaping to a considerable distance.

Aphida.

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LAC COCCUS.

The lac coccus is sometimes found in its cerements on a species of ficus where it has deposited its eggs, reared its own mausoleum and died, but lac is not formed extensively in these Provinces, though very abundant in the Shan states adjoining. The Karens think the lac is produced by an ant, and call it the lac ant.

Coccida.

၅၂၅၁၁၂. တၢ်သံ. (၆၂၅. Lac.)

DIVERSE-WINGED INSECTS.

The *Heteroptera*, or diverse-winged insects, are represented in these Provinces by water boatmen, water insects, water skippers, and a large tribe of bugs, of which the bed-bug is the type.

WATER-BOATMAN.

A water insect that swims on its back, and dives with great facility, may be sometimes seen in our transparent streams. It belongs to the tribe of water-boatmen.

တၢ်သံး၆၂၅.

WATER INSECT.

A large water insect, as denominated by the natives, resembling a gigantic cockroach, is not uncommon. The perfect insect has "the tarsi two-jointed, but quite incorporated with the extremity of the tibiæ, and terminated by a long, slender, and acute unguis," characteristic of the ge-

nus belostoma. A specimen before me measures two inches and three quarters in length. From some brief remarks on the Asiatic species of this genus, by Dr. Leidy in the Journal of the Academy of Natural Sciences of Philadelphia, the Tenasserim species is, I judge,

Belostoma indica.

ဘီၤပၢၣ်ခွၢ်ၤဖၢၢ်. ထံးဃၢ်.

WATER SKIPPER.

A long-legged insect may be frequently seen stalking haughtily about on the surfaces of our inland streams, like a Burman king on the shoulders of his human horse. It has obtained the appropriate name of water-skipper. The Burmese call it the "marine officer."

Gerris.

ဂျေၣ်း. ကဝီၤထံး ထီၣ်လှၢ်ဖိၣ်. ထံးဃၢ်. မိၣ်လှၢ်ဖိၣ်ခွၢ်.

BED-BUG.

The bed-bug is said to have been introduced into England from America, but it has been known in this country from time immemorial, and is found in every native dwelling. It has the appearance and habits of *C. lectularis*, but there may possibly be some specific points of difference.

Cimex lectularis.

ကျမ်းပိး. ဖၢၢ်. ဃီၤ.

WINGED BUG.

There are several species of the same tribe that furnishes the common bed-bug in the Provinces, with precisely the same disagreeable odour, but much stronger. A single insect crossing the path will infect a stratum of air of several feet in width, which remains for a considerable period. A small black species sometimes comes on the table around the lights at evening, which is very disagreeable, though its scent is not so strong as that of some others. In smaller numbers a grey species is an occasional visitor.

Scutellerida.

GREEN BUG.

A large greenish species of the Linnæan genus *cimex* is very injurious to fruit. I have observed individuals repose for hours on the oranges that were nearly ripe, sucking their juices through the skin; and when the oranges were plucked, they had large scars on the places where the insects had rested, and the orange within was injured in those places.

Cimex,
Scutelleridæ ?

Linn.
Westwood.

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PADDY-BUG.

The Karens near Rangoon describe a similar insect as some years effecting much injury to the paddy by absorbing its juices, before the kernel has become hard. Whole fields of rice are sometimes abandoned in consequence of the devastation of the paddy-bug. The offensive odour which some of these insects emit appears to be done in self defence. Some, the grey species especially, will come about the table and not the slightest disagreeable scent be discovered, but no sooner has one come in contact with it, than it emits an intolerable effluvia.

Cimex.
Scutelleridæ.

Linn.

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၆၆.

COPPER-COLORED LAND BUG.

A land bug of a copper color, sometimes shows itself with a long, four-jointed proboscis, and two sharp thorns on the corners of the thorax, with four smaller ones in a row between. Unlike most of its tribe, it emits no odour whatever.

Reduviidæ.

BLACK LAND BUG.

A black species is common with elegantly ornamented wings, and a long, four-jointed rostrum, which emits no smell when undisturbed, but a very odious one when handled. The hind legs are enlarged, as if they belonged to a water insect.

Coreidæ.

THICK-LEGGED BUG.

A small bug remarkable for its thick fore legs, is seen occasionally.

Lygaeidae.

NON VISIBLE-WINGED INSECTS.

The *Aphaniptera*, or insects with wings that are not apparent, embrace only the single tribe of fleas.

FLEAS.

Fleas, like rats, seem to be cosmopolites, and are found every where in great abundance.

Pulicidae.

ငွေလေး၊

ချိုက်၊

ကျံ၊

TWO-WINGED INSECTS.

The *Diptera*, or two-winged insects, embrace gnats, mosquitoes, father long-legs, gad-flies, house flies, and flesh flies.

GNAT.

Small gnats that are usually called sand flies, abound on the sandy banks of rivers, and near the sea-coast, where they are the greatest annoyance of the whole insect tribe.

Pulicidae.

ချိုတ်၊

ငါးပိတ်၊

စားသူး၊

MOSQUITO.

Mosquitoes, at some seasons, almost cloud the air with their myriad numbers, and the only mode of escape from their sanguinary attacks is by hiding beneath a strong curtain; for though they will pierce through all kinds of apparel, yet they are not able to force their whole bodies through a bed-curtain; still they are no more numerous, or annoying here than I have found them on the Mississippi river. We have at least two species, one of which is banded with white stripes, and is more voracious than the other; as soon as it begins to taste blood the hand may be brought slowly upon it, and it chooses death rather than flight.

The larvæ of gnats and mosquitoes may be always seen in water that has stood for a few days, where they are readily discovered by their active motions, often diving and rising again to the surface. To avoid taking these insects in drinking, and thus destroying animal life, the Burmese priests strain their water, like the Pharisees of old, and it was these gnats in the larva state to which the Saviour referred, and not the gnat, properly so called, as the word is often rendered. In the languages of this country, at least, there are two distinct names for these two distinct things, and one does not imply the other.

Culicidæ.

ခြင်	ဝံင်ဂေ့.	ပမိး	(Mosquito.)
ဒီးလောက်လန်း	ဒီးလောက်ထိုး		(Larva.)
ဘိာဂံ.		“	
ခွင်ကိန်း	ခွင်ကိန်း	“	

LONG-LEGS.

The well known long-legged insect, known in England as father long-legs, or crane-fly, has its representative in the Provinces. The Karens call it long-legged mosquito.

Tipulides.

ဝေဝဓာဝေ.	ပမိးထီစုး
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GAD-FLY.

Gad-flies bite so severely that when one appears among half a dozen natives, they begin to scatter at once, and do not rest till they have either killed it or driven it away. They are not numerous in individuals, or they would be intolerable. Whenever they have attacked me they have brought the blood at every bite, and they attack equally man and beast. The Karens distinguish three species.

Tipulidæ.

မှက်	
သံဒောဒွာ.	စိုခွန် ပကီးယး ထီးကလံ
ထီတလိ	(Dark brown gad-fly)

ခပ်ရွာဝှ. (White handed gad-fly.)
 ပက်တီခိ. " headed "
 ခပ်ရွာမိ. ပက်တီခိ. " eyelid monkey "

MIDGE.

Clouds of midges which are sometimes improperly called gnats, may be often seen performing their nightly waltzes.

Tipulidæ (*Chironomides*.)

HOUSE FLY.

The house fly, contrary to what most persons expect, is much less numerous than it is either in England or America, and occasions very little annoyance.

Muscidæ.

ယင်ကောင်း. ဝှါ. သပ်ဘုထိ.

FLESH FLY.

Flesh flies are exceedingly abundant, and very troublesome. The natives distinguish two kinds.

Caliphora.—*Sarcophaga*.

ဝှါမိ. သံမိ. သပ်ဘုထိသံမိ.

PADDY-FLY.

One year the crops in the southern part of Tavoy and in Mergui Province, were almost wholly destroyed by a fly, that bore a strong resemblance to the famous Hessian fly.

Cecidomyides (*Cecidomyia* ?)

SPIDERS AND SCORPIONS.

The *Arachnida* or spiders, scorpions, and ticks, are sometimes treated as a class by themselves; but they are here placed under the head of entomology for the sake of convenience; and in accordance with the practice of many naturalists.

DOMESTIC SPIDERS.

The common domestic spider, aranea, is much less common in houses in this country than in Europe and

America, which I attribute in a great measure to the geckos which devour them, and take their place.

Aranea.

ပင့်ကူကောင်၊ ခါး. ကပ်း

LEAPING SPIDER.

A small spider is often observed that forms no web, but takes its prey by hunting it, and when within reach, leaping upon it like a cat. One of these spiders, will watch a small insect for a long time, and follow it at a distance, concealing itself as much as possible from observation until within the reach of a single leap, when it springs upon its prey at once. These belong to Swainson's tribe of vagabonds.

Vagaborda.

Salticus ?

RUNNING SPIDER.

A large spider that runs after its prey is seen in houses, and the females attract observation by the large cocoon of eggs that they are often seen carrying under the abdomen, like a squaw with her pappoose at the breast.

Lycosa.

GEOMETRIC SPIDER.

The geometric spider is exceedingly abundant. They construct their webs in concentric circles, or spirals, on the model of the common garden spider, or the geometric spider *epeira*, affixing them in a perpendicular position in the branches of trees. They belong to Swainson's division of the wanderers, so called from their habit of running about in the vicinity of their nests, or webs, which they have constructed.

Orbitcles. (*Epeira ?*)

GRASS SPIDER.

One or more species of spiders are very abundant, which make horizontal webs in the grass, with a tube connecting it with some hole or crevice near it, like *Agelena navia* in the United States.

Agelena ?

WATER SPIDER.

A spider that skims upon the water, and dives beneath the surface when pursued, is not uncommon. It looks like a species of a genus of water spiders, common in the United States.

Dolomedes.

ကဝိးထံး

MYGALE BEAR-SPIDER.

A large black, hairy spider, with tusks like a centipede, and very poisonous, is occasionally seen. The Karens call it the bear-spider. It is of the genus mygale, famous for the questionable habit of devouring birds; but the natives say that it kills cobras, and other large snakes, and eats their brains.

Mygale.

တောပင်းရူး

ဘုမား

ကဝိးတလူး

BLACK SCORPION.

A black scorpion is very common in the neighborhood of Maulmain, though but rarely seen in the southern provinces. It can inflict a fearful sting.

Scorpio.

ကင်းမြီးကောက်

တုဘိဆွဲ

BROWN SCORPION.

A small brown scorpion abounds in the southern provinces, and is the species usually found in houses. Its sting is severe, but the effect usually passes away in twenty four hours.

Scorpio.

ဒေဂျိယာ

ပတုရူး

TICK.

A tick is common which lives on plants, but often attaches itself to travellers, when it eats its way into the flesh like the chigoe of the West Indies, producing festering wounds, if not extracted. I have often seen them pulled off when their head and shoulders were buried in the person's flesh, and they never let go their hold unless they

are forcibly drawn away, when it is not uncommon for their heads to be left in the wound.

Acaridæ.

မွာက ဘုံ, ခံနီ

LARGE TICK.

A large tick, which does not appear to attach itself to man, I have sometimes observed. I found a very large individual once on a serpent.

Acaridæ.

MYRIAPODA.

The *Myriapoda*, or centipeds, and millepeds, though included among insects by some writers, are now more generally regarded as constituting a distinct class by themselves.

CENTIPED.

Two or three species of centipeds are common. One is often more than six inches long, with a very large pair of poisonous fangs. A specimen now before me that fell from the thatch-roof upon a lady's shoulder, measures nine inches in length, and an inch and a quarter in circumference.

Scolopendra.

ကင်း, ခပ်, ခါဘီ

LUMINOUS CENTIPED.

A small centipede which emits a strong, phosphorescent light, is very common. It does not, however, appear to give out its light until it is wounded, or at least attacked, when the whole of the part that has been touched suddenly becomes a living blaze, in no way dependent on the respiration, as in the fire-flies. There is a small dark line down the back, and indications of the joints of the body, but each lobe glows like a mass of phosphorus.

Scolopendra phosphorea.

ကင်းနီ

MILLEPED.

A smaller and larger species of milleped are very common.

Julus.

ကင်း, ဝါဝါ, သံဗိရံ

CONCHOLOGY.

A large proportion of the land and fluviatile shells of Burmah and these Provinces were new to science until recently, and are wanting in the collections of most scientific societies in Europe and America. The large sea-shells are well known species, but among the small unattractive mollusks, are a few novelties.

LAND SHELLS.

I have collected twenty five species of land shells in the Provinces, twenty of which have been described by Dr. Gould as new.

SNAIL.

The genus *helix* to which the common snails of England and America belong, is represented on this Coast by eleven species, all of which are new, being first described by Dr. Gould.

H. procumbens, is a flat discoidal shell, with four whorls, the outer one deflected. "Diameter $\frac{3}{4}$ of an inch; height $\frac{1}{4}$ of an inch. Belongs to the group of which *H. planulata* is the type." Mr. Benson identifies this with his *H. delibrata*, described in the Journal of the Asiatic Society 1836.

H. infrendens, is a small orbicular shell with three oblique teeth. "Diameter $\frac{2}{3}$ of an inch; height $\frac{1}{4}$ of an inch. Very closely allied to *H. rangiana*, Fer."

H. anceps, (*Caraco'la*) is a fragile shell with six whorls. "Diameter $\frac{7}{10}$ of an inch; height less than $\frac{2}{3}$ of an inch. In general form, color, and sculpture, it resembles *H. acies*, Fer. (*acutimargo*, Rosm.) but is much smaller, and not widely umbilicated."

H. honesta, is a small thin shell with five whorls. "Diameter $\frac{9}{10}$ of an inch; height $\frac{1}{4}$ of an inch. Resembles *H. fusca* more than any other species I have seen. It is probably a *nanina*."

The above four species are remarkable for being found on the branches of the peepul, and other species of the genus ficus. This is so characteristic of these snails, that the Karens call them ficus shells.

ခရုကွက်၊ ချပ်ပလျာ၊ မှိုဉ်ချဉ်၊ မှိုဉ်ပထွာတူဉ်ကိဉ်း။

H. saturnia, has five whorls, and is the largest species of the genus that we have off the Coast. "Diameter 2 inches; height $1\frac{1}{2}$ inch. In size and form it is like *H. lampas* from Jamaica; but differs especially in having a broad, deep umbilicus."

ခရုကွက်၊ ချပ်ပလျာ၊ မှိုဉ်ဘူး။

H. refuga, is a sinistral shell with a depressed spire, six whorls, and deflected aperture. The Karens do not distinguish it from the planorbis. "Diameter $\frac{2}{3}$ of an inch; height $\frac{1}{2}$ of an inch. This remarkable shell is almost exactly like *H. carbinata*, Fer., except that it is reversed, and has no lamellæ revolving within the outer lip."

ခရုကွက်၊ ချပ်ပလျာ၊ မှိုဉ်ပာခံ။

H. anguina is another species in the neighborhood of Maulmain, that bears a great resemblance to *H. refuga*; of Tavoy, which I have not seen in the northern provinces.

H. (Caracolla) gaba'a, has a carinated periphery, and very deep umbilicus. It is most abundant during harvest, and hence the Karens call it the paddy shell. "Diameter $\frac{1}{2}$ of an inch; height less than $\frac{1}{4}$ of an inch. Much like *H. scabriuscula* in form and aperture, but quite different as to surface, colour, and umbilicus."

H. (Caracolla) retrorsa, is a large sinister shell; called by the Karens the paddy blossom shell, because most abundant when the paddy comes into flower. "Diameter $1\frac{1}{4}$ inches; height 1 inch. This large heterostrophe helix resembles an inverted specimen of one of that group of shells, so common and so varied, from the Philippine Islands, of which *H. lamarckii* is one. Young specimens might, at first glance, be confounded with *H. himalana*, (Lea); but the himalana is much more globular,

the surface less striated, the carina quite indistinct, and the umbilicus smaller."

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H. (Streptaxis) petiti, is a distorted little shell, with a spire of seven whorls. The Karens call it the coix shell, from its resemblance to the seed of a species of coix. "Length $\frac{1}{2}$ of an inch; breadth less than $\frac{1}{10}$ of an inch. In size and exterior, it closely resembles *S. aberrata*, (Souleyet) but is rather larger."

The streptaxis which I have met with at Maulmain, appears to me to be a distinct species.

ROUND-MOUTHED SNAIL.

A genus of snails called cyclostoma, from their round mouths, embrace the largest land shells in the Provinces.

C. tuba, (Sowerby), is more common, perhaps, than any other species.

C. pernobilis, (Gould), is also very abundant. It is the largest land shell in the country, and the largest species of its genus. The Karens call it the primary shell, i. e. the one from which others are derived. The Burmans call it the quiet shell, as they say it calls out *quiet, quiet!* Nearly all the different species of helix above are called by the Burmans varieties of the quiet shell. "Diameter 2 inches; height 1 inch. This superb species is a little larger than any one hitherto described. The *C. involvulus*, Sowerby, is a miniature of it." Pfeiffer, a german conchologist, says this shell is identical with *C. aurantiacum*, (Schumacher.)

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C. sectilabrum, (Gould), has an elevated spire with eight whorls. "Length 1 inch; breadth $\frac{1}{2}$ of an inch. Closely resembles *C. altum*, (Sowerby), but has the fissure across the peritreme on the opposite side. *C. croceum*, (Sowerby,) may be only a faded specimen of this shell." Benson says it is quite distinct from *C. croceum*.

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GROOVED-MOUTHED CYCLOSTOMA.

At Maulmain, *Pterocyclos rupestris* is not uncommon, a shell which differs from those belonging to cyclostoma by having "a groove at the hinder part of the mouth."

BULIMUS.

We have three or four species of bulimus. One, a small red species, Dr. Gould, thought to be new, but hesitated, and he has not therefore described it. Another is undescribed in my collections.

B. atricallosus, (Gould), is a large and elegant sulphur-colored species, with seven whorls. It is a great favorite with Karen females, and is often seen strung, with the other species of the genus, on their necklaces. They call it the yellow shell. The Burmans call it heron's dung. "Length $1\frac{1}{2}$ inches; breadth 1 inch. It is of the same type as some of the shells from the Philippine Islands, as *B. vittatus*, *dryas* and *maculiferus*." Both Indian and German conchologists regard this shell as a variety of *B. citrinus*.

B. moniliferus (Gould), is a variegated shell with seven whorls, for the most part sinistral, but I occasionally meet with dextral shells. "Length $1\frac{1}{2}$; breadth $\frac{7}{10}$. Differs from *B. contrarius*, and *B. laevis*, (Mull.), by its angular aperture, and the color of its lip and throat."

CLAUSILIA.

I met with one species of clausilia, at Tavoy, the largest species of the genus known. Dr. Gould named it *C. insignis*.

Dr. Phillip, a German naturalist, collected specimens of another species at Mergui, which has been named *Clausilia Philippiana* and I have since met with it in Amherst province. Pfeiffer says of this species: "Mit *C. insignis* (Gould), nahe verwant"—very nearly related to *C. insignis*." It would be difficult to find two better marked species. The latter with nine or ten whorls, has not half the diameter of the former, which has only six whorls.

SUCCINEA.

On the flowering shrubs in my garden in Tavoy, I occasionally found a species of succinea, which Dr. Gould has named *S. semiserica*. "Length $\frac{1}{2}$ inch; breadth $\frac{3}{16}$ inch; height $\frac{3}{16}$ inch. Its shape is like *S. tigrina*, Ferri, and it is well characterized by the silky-white or pearly surface of the anterior half of the shell."

VITRINA.

The genus vitrina is represented by *V. præstans*, (Gould;) a very delicate shell. "Greatest length $\frac{1}{4}$ of an inch; height $\frac{1}{8}$ of an inch. The colour is dark straw-colour, or amber-colour, inclining to green."

ACHATINA.

Under every pile of fallen leaves, under every brick that has laid a few weeks on the grass, and under every stick of fallen timber, may be found in Tavoy, a small, sulphur-coloured species of achatina with eight whorls; *A. octona* (Gould.)

PUPA.

In the same localities, and in company with the above, may be occasionally seen a small red species of pupa; *P. melita*, (Gould.) "Length $\frac{9}{16}$; breadth $\frac{3}{16}$. The general aspect of the shell is not unlike that of *Achatina octona*."

RIVER SHELLS.

Thirty species of river shells are known in the Provinces, of which Dr. Gould has described seventeen as new.

FRESH-WATER MUSCLES.

All the fresh-water muscles hitherto discovered in the Provinces are new species. Dr. Gould has described, and named seven species; and I have specimens of another in my collections. Pearls produced by these muscles have been occasionally brought me.

Unio foliacea; *U. crispata*; *U. exolescens* and *U. tavoyensis*; *Anodon inoscularis*, and *A. salweeniana*.

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RIVER CONCHACEA.

The mountain streams of Tavoy contain a small species of cyrena, with a yellowish epidermis.

Cyrena.

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Another large species is found near the mouths of rivers, but when I identified it with specimens in the Asiatic Society's Museum in Calcutta, I was unable to learn with certainty its specific name.

DREISSINA.

A small species of dreissina from the banks of the Tenasserim, which I sent to America, was not only new, but it was deemed remarkable that any of the genus should be found in this country. Sowerby refers the genus to Europe and Africa, so that when he wrote in 1846, no species of the genus was known to exist in Asia.

Dreissina.

PLANORBIS.

A species of planorbis is common in the standing pools of Tavoy, and in many other localities in the Provinces. I have identified it with a species that abounds all over India.

Planorbis indicus.

ခရုဝတ်. ချပ်ဝါခါ. ချိၣ်ပာၣ်ခံ.

LYMNEA.

In the lakes and ponds of Amherst province, a species of lymnea is not uncommon.

Lymnea acuminata.

MELANIA.

Our rivers are inhabited by at least ten species of melania, six of which Dr. Gould has described as new. One is the largest species known, and is named the Hercules melania. Another is remarkable for being covered with large spines.

<i>Melania herculea,</i>	Gould.
“ <i>pagodula,</i>	“
“ <i>baccata,</i>	“

<i>Melania, humerosa,</i>	Gould.
" <i>fluctuosa,</i>	"
" <i>batana,</i>	"
" <i>thiarrella,</i>	Lam.
" <i>corrugata,</i>	
" <i>himalania.</i>	

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APPLE SHELL.

A species of apple shell abounds at Tavoy, and is occasionally seen in the neighborhood of Maulmain.

Ampullaria globosa.

သရက်၊ သရက်၊ ချပ်ပေါ်ဘေး၊ ချပ်ပေါ်ဘေး၊
ချပ်ပေါ်ဘေး၊ ချပ်ပေါ်ဘေး၊

PALUDINA.

The natural family to which the apple shell belongs, furnishes two species of paludina in the Provinces, both of which are new.

<i>Paludina petrosa,</i>	Gould.
" <i>doliaris,</i>	"

သရက်၊ ချပ်ပေါ်ဘေး၊ ချပ်ပေါ်ဘေး၊
ချပ်ပေါ်ဘေး၊ ချပ်ပေါ်ဘေး၊

သရက်၊ သရက်၊ ချပ်ပေါ်ဘေး၊ ချပ်ပေါ်ဘေး၊
ချပ်ပေါ်ဘေး၊ ချပ်ပေါ်ဘေး၊

AMNICOLA.

A new species of amnicola, a shell resembling paludina, is found near the head-waters of the Tenasserim.

<i>Amnicola cincta,</i>	Gould.
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NERITINA.

The mountain streams of Tavoy contain two species of neritina, one of which is new.

<i>Neritina capillulata,</i>	Gould.
" <i>indica.</i>	

MIDAS' EAR.

In the mangrove swamps I have frequently met with a shell that appears to me identical with one called midas' ear.

Auricula Judæ.

SCARABUS.

Another shell of the same genus now called scarabus, is so abundant that the animal with its shell may be sometimes seen in the Maulmain bazars, where it is sold as an article of food.

Scarabus plicata.

SEA SHELLS.

There are few sea shells at Amherst, but they increase in number and variety on proceeding south to the Mergui archipelago; but the most conspicuous and handsome species may be seen in collections made on the western side of the Bay of Bengal, and the Indian Ocean.

BORERS IN TUBES.

The pear-shaped tube of the gastrochæna, and the bases of the aspergillum, which resemble the mouth of a watering pot, are sometimes found in the sand; but by far the most abundant of the borers that dwell in tubes is the teredo. The well known *Teredo navalis*, that tunnels its way through the sides of ships, sometimes making fearful ravages, is exceedingly common in our waters; and there is another distinct species said to grow a fathom long, found in old fallen trees exposed to the tide-waters. It corresponds well with *T. gigantea*, except that that species is said to bore in hardened mud, which this never does. This species perforates wood only, and is most abundant in the mangrove swamps. If it be not *T. gigantea*, it is undescribed. The worm is considered by the natives very good eating, and is collected and sold in the bazars. They call it

ပလ္လုဝ်.

ဖါးဝါး.

ပိလ္လာင်း ပိလ္လု.

BURROWING SHELLS.

Shells of the genus *pholas* may be often found in old coral; and on the mud banks on the coast between Tavoy and Mergui is found a large species with a fragile shell. The natives eat the animal.

ခရုကြောင်ဗွာက်၊ ချပ်ပျံ၊ ချပ်ပျံ၊
ခရုဆင်ဒွာမောင်၊ ချပ်ပျံ၊ ချပ်ပျံ၊

RAZOR-SHELL TRIBE.

There are several species of solen, or razor shells. One species with a thick brown epidermis, is often seen for sale in the Tavoy bazar. The natives do not distinguish the species.

Solen abbreviatus, (large species.)
" *diphas*, (small ")
ခရုဆင်ဒွာမောင်၊ ချပ်ပျံ၊
ချပ်ပျံ၊

I never land on the sandy shores between Amherst and Mergui, without meeting with a pretty blue and white radiated species of

Solenocurtus.
ကဲး၊ ချပ်ပျံ၊
ချပ်ပျံ၊

LITTLE BASKET-SHELL.

The shells of a small species of *pandora* may be often gathered on the sea-shore. The natives denominate them, as they do many other small bivalve shells,

Pandora.
ရှပ်၊ ရှပ်၊ ရှပ်၊

PROMINENT LIGAMENT SHELLS.

The dead shells of a small species of *tellina* are seen on the sands, as are also the shells of a species of *tellinides*. The Karens do not distinguish them from the shells of the next family.

Tellina shengleri.
Tellinides timorensis.
ခရုဆင်၊

shells of several other species are scattered every where on the sandy shores, among which may be frequently found that curious shell, often supposed to be a monster, *A. tortuosa*. In the same localities may be collected the large shell of the eared cucullæa.

Arca graniosa.

" *tortuosa.*

Cucullæa auriculifera.

ရှင် (ရှင်လိမ်၊ ချပ်ခေါ့၊ မှိုက်ကုန်၊ *A. tortuosa.*)

The dead shells of a species of *nucula* may be sometimes seen on the sands; and another species, which I found in the mud brought up by the anchor in five fathoms water off the Coast, Dr. Gould has described as

Nucula turgida.

ရှင်၊ ခရုနီဝါ၊ SJ. ရှင်၊

GIANT SHELLS.

More than one species of *tridacna* are found on the shores of the Mergui islands; and one species, the giant *tridacna*, may be sometimes seen with its two valves weighing several hundred pounds.

Tridacna gigas.

ကျားလက်သံ၊ ကလွန်တောင်၊
၂၅၀၀၀၊ လှိုင်မိဂျင်၊

SALT-WATER MUSCLES.

A large species of muscle may be sometimes seen in the bazar, where it sells for a comparatively high price, being regarded by the natives as the best eating of any shell fish in the country. It belongs to the section of the genus without longitudinal furrows. It is unlike any muscles I ever saw before, and is not improbably an undescribed species. Another, and much smaller species, with longitudinal stria, may be found attached to the rocks in miry situations.

Mytilus.

ကြောက်ပင်ဝန်၊ ချပ်ပရဝါ၊ မှိုက်ဝါ၊

A species of *modiola* may be frequently met with in the bazars. It is a new species, and has been named by Dr. Gould *M. varicosa*. The Karens have no name to distinguish it from the muscles-

ကဘုန်သား။

The brittle shells of a large species of pinna, not differing from figures of *P. flabellum*, are not uncommon on the sandy shores. The Karens call them by the same name that they do the salt-water muscle.

ပင်ဝန်။

Large pieces of coral of the genus *astrea*, common on some parts of the coast, frequently abound with a species of

Lithodomus.

ချေကြောက်ဗွတ်။ ချုံ၊ ခေ၊ ချိန်ခိန်။

PEARL OYSTER.

The pearl oyster is found in the Mergui archipelago. Capt. Lloyd mentions a pearl oyster bank on the southern part of Lampee Island: and Dr. Helser said there were others on the western side of the Selebee Islands. The pearls, however, are not highly valued.

Meleagrina margaritifera?

Hammer-headed oyster shells are often seen in collections made in the Bay of Bengal, but I have not met with them on the coast; though a small species of *perna* is not uncommon.

- *Perna*.

ကမာချင်း။ မောဂရု။

ကမာကြွေး။ ကမာကြွေး။

SCALLOP TRIBE.

The well known scallop shells, ribbed and eared, have several representatives. We have species belonging to both sections of the genus, some having the ears unequal, and others having them nearly equal.

Pecten.

ပဲကွင်းရှင်း။ ချုံ၊ ပမာ၊ ခေ၊ ချိန်ခိန်။

A species of *spondylus*, a shell readily recognized by being covered with spines, is not uncommon.

Spondylus.

OYSTER.

Oysters are found on the coast from Amherst to Mergui, but they are not very abundant, nor very good.

Ostrea.

ကမိ၊ ကနကမိ၊ ဓမာ၊ ကမိ၊

CHINESE WINDOW-OYSTER.

A species of *placuna*, the Chinese window-oyster, is quite abundant near the mouth of Tavoy river.

Placuna.

သဘျာ၊

TONGUE SHELL.

A species of *lingula*, or little tongue, so denominated from the resemblance of the shell to a small tongue, is occasionally met with on the Tavoy coast.

၁ *Lingula anatina?*

CHITON.

A species of *chiton*, a well known multivalve, is so widely diffused as to be occasionally sold in bazar as an article of food.

Chiton aculeatus.

ကဇို၊ သဇို၊ ဓဇဝံ၊ နိုးဆဲဉ်၊

LIMPET.

A large species of limpet abounds in some localities; and patelliform shells belonging to two or three other genera are not uncommon.

Patella testudinaria.

.. *Siphonaria*

Calyptrea.

သမီးနိုး၊ ချပ်ဟံ၊ ခိပ်၊ ခိပ်နိုး၊ ခိပ်နိုး၊ ခိပ်နိုး၊

BUBBLE SHELL.

Two species of bulla are occasionally seen, one of which is that elegant little shell the banded bulla.

Bulla velum.

ခရုသံကလေး ချပ်ပျံ ချိပ်သွန်.

SEA-HARE.

In the mangrove swamps I have sometimes collected specimens of a species of aplysia, which was called by the ancients the sea-hare.

Aplysia.

PARTITION-LIPPED SHELLS.

Two new species of nerita are found in great abundance near the mouths of some of our rivers. One was named by Dr. Gould,

Nerita articulata.

Three or more species of natica belonging to the same tribe as nerita, and called by the same native names, are not uncommon.

Natica maculosa.

" *lineata.*

" *melanosterna.*

ခရုယာပင်လဲ ခရုချက်လုံ ချပ်ပျံ၊ ချိပ်သွန်၊
ချိပ်ပန်ခွန်.

SEA-EAR.

I have seen two species of sea-ear from the islands in the Bay of Bengal, one of which is remarkably brilliant, and beautifully iridescent, and they probably exist on our coast.

Haliotis.

TURK'S-CAP.

A large species of trochus, often called turk's-cap, is seen in great numbers on the shores of some of the islands.

Trochus.

ဆင်တွံ.

STAIRCASE TROCHUS.

The species of solarium called the staircase trochus, so common in collections, may be often gathered on our shores.

Solarium perspectivum.

ချပ်၊ ဟို၊ ဖပ်၊ မှိန်တွဲမိ၊

ROTELLA.

On every sandy beach may be seen great numbers of a pretty diminutive species of rotella.

Rotella restraria.

ခရုယာပင်လဲ၊

MONODONTA.

A small shell characterized by a "tooth-like projection in the aperture," and of the genus monodonta, is quite common. The natives have no name to distinguish it from nerita.

Monodonta.

TURBO.

One or more species of turbo are found on the coast, but they are not abundant.

Turbo.

SCREWS.

The shell-fish called screws, from the shape of the shell, may be often seen in bazars.

Turritella terrebra.

ခရုစုခိုလိပ်၊ ချပ်၊ ဟို၊ ဘု၊ မှိန်၊ တီး၊ မှိန်လဲ၊

PERIWINKLE.

Two new species of littorina, or periwinkle, are found in great numbers on the rocks washed by the tides.

Littorina.

CERITHIUM.

Two or more species of cerithium are common. One is seen for sale in the Maulmain bazars.

Cerithium obtusam.

ခရုကုန်၊ ချပ်၊ ဟို၊ ဘု၊ ဟို၊ မှိန်၊ တီး၊ မှိန်လဲ၊

TOWER-OF-BABEL.

A shell which from its long contorted spire is sometimes called tower-of-Babel, is occasionally found along the coast.

Pleurotoma babylonica.

DISTAFF FUSUS.

The distaff fusus, a favourite shell with collectors, may be seen occasionally on the Tavoy coast.

Fusus colus.

PYRULA.

The fig-like pyrula, the bat-like pyrula, and a third and smaller species of the same type as the latter, are among our most abundant shells.

Pyrula ficus.

" *carnaria.*

ခရုသံကြီး၊ ချပ်ပျော့၊ မျှင်ဆွ၊
ခရုဝက်တောင်၊ ချပ်ပျော့ပျံ့၊ မျှင်ဆွန်မီး (small species)

MUREX.

Several species of murex abound. One resembles the royal murex, and is a ponderous shell, almost a foot long. The Burmese call it "dragon's-head."

Murex regius.

နဂါးခေါင်၊ ချပ်ပျော့ပျံ့၊ မျှင်ပယ်၊ မျှင်ဆွန်မီး

THORNY WOODCOCK.

A shell remarkable for its long slender spines, and which is called both venus's-comb, and thorny woodcock, is scattered on our sandy shores.

Murex tribulus.

FROG SHELL.

One or more species of ranella, a shell resembling the murex, is not uncommon.

VARIEGATED TRITON.

Fine specimens of that large handsome shell, the variegated triton, are sometimes brought from the Nicobar Islands, and they may possibly exist on this Coast, although I have never met with them.

Triton variegatus.

CONCH SHELL.

The Hindus in their processions may be seen blowing a large conch shell, apparently a species of triton that I have not met with on the Coast ; but one or more small species are not uncommon.

Triton

SPIDER.

A large shell, well known by the not inappropriate name of spider, is very abundant on the islands of the Mergui Archipelago. The Burmese call it crab-shell.

Pteroceras scorpius.

ခရုကန်နီ၊ ချပ်ပာဒါဒေဝ၊ မြိုင်ထိဆူဂ်

BROAD-WINGED STROMBUS.

A large, elegant shell, with the outer lip expanded into a broad wing, is brought from some localities on the borders of the Bay of Bengal.

Strombus latissimus.

RHINOCERO--HEAD.

A gigantic shell, resembling the head of a rhinoceros when laid on its mouth, is brought from some of the shores bordering on the Bay of Bengal. It appears to be a species of cassidaria, nearly related to the spinous cassidaria.

Cassidaria.

TUBEROSE CASSIS.

Fine specimens of that handsome shell, the tuberose cassis, I have seen brought from the Andamans, and may doubtlessly be found in other localities. A smaller, and less elegant species may be often gathered on our sandy beaches.

Cassis tuberosa.

VENTRICOSE HARP.

That curious shell the ventricose harp, is found in the Bay, but I am not certain of the locality from whence I obtained my specimens.

Harpa ventricosa.

DOLIUM.

A large, thin, inflated shell, of the genus *dolium*, is very common in some localities. It resembles the figures of

Dolium galea.

ဘုရား

BUCCINUM.

A species of *buccinum*, which I sent Dr. Gould, proved to be undescribed.

Buccinum (Nassa)

VOLUTA.

A large, handsome species of *voluta*, is not uncommon on the coast of Mergui.

Voluta.

ခရုသင်း

ချပ်ပေခရာဘု.

ရိုက်ကုန်းသီး

COLUMBELLA.

Two small species of *columbella* may be seen on the rocks, and sometimes crawling up the mangrove trees, one of which is new.

Columbella duclosiana,

Sowerby.

" *rhomboidea*,

Gould.

ခရုသစ်ပင်တက်၊ ချပ်ပေ-ချပ်ပေသီး၊ ရိုက်ကုန်းသီး

WEAVER'S SHUTTLE.

Among the rare shells found on our coast is the weaver's shuttle.

Ovulum volva.

COWRY.

Several handsome species of cowries abound on the shores of the southern provinces. One is

Cypræa mauritiana.

ကျွန်း

၂၅.

လှိုင်

CONE.

Cones are numerous, both in individuals and species.

Conus.

OLIVE.

Several species of olives are strown on the coast from Amherst to Mergui. One is

Oliva utriculus.

ကျောက်၊ ခုတ်ပထိုး၊ ချပ်စပ်ဘိ၊ ချပ်ပသး။

CROOKED-TRUMPET.

The broken shells of a species of spirula may be sometimes seen on the sandy beaches.

Spirula.

ခရုခွာပေင်းလိပ်၊ ချပ်ပျော့၊ ချပ်သဏ္ဍိ၊

NAUTILUS.

The dead shells of a species of nautilus are found on the sandy beaches in great abundance.

Nautilus.

ခရုသဘိ၊ ချပ်ပျော့၊ ချပ်ခွံ၊

SMALL CUTTLE FISH.

A small cuttle fish is often found in the waters on our coast, belonging to the genus with eight limbs.

Octopus.

ခရုကြက်၊

LARGE CUTTLE FISH.

The shores are thickly strown with "cuttle fish bone," indicating that large cuttle fish are also abundant. Among the "sea slug" that is dried and offered for sale at Mergui, is, if I am not mistaken, a species of loligo, or cuttle fish.

CRUSTACEOLOGY.

The crustaceans are represented on this Coast by sand crabs, paddling crabs, beckoners, fresh-water crabs, river crayfish, sea mantis, hermit crabs, sow bugs, king crabs, and barnacles.

SAND CRAB.

This is a small crab that may often be seen running on the sands of the sea shore, into which it burrows. It belongs to a tribe remarkable for having their eyes seated on peduncles, but Mr. Blyth remarked on specimens sent him from Amherst by Mr. O'Riley — "The remarkable ocular peduncles only begin to appear when the crab is nearly a quarter grown."

Ocypoda ceratophthalma.

PADDLING CRAB.

A common crab seen in bazar, belongs to the tribe of paddling crabs, distinguished from the common crab by having the last pair of legs flattened into thin plates like paddles.

Platyonychus?

ကနန်

ဒွိပုလိ

ဆွဲပိပ်ခွေ

BECKONER.

Another small crab common on the sea-shore where it burrows usually in companies, belongs to the genus *Gelasimus*, and is identical with a species found near Calcutta. The male is remarkable for having one claw much larger than the other, and when running, they often elevate this claw, as if beckoning to some one, and hence they are denominated callers, or beckoners. In Massachusetts an allied species is called the "fiddler crab."

Gelasimus.

RED FRESH-WATER CRAB.

A small red crab is very abundant on the banks of fresh-water streams in the interior, where their burrows are constantly seen in wet situations.

လယ်ပွန်

ဒွိဝါ

ဆွဲပိပ်

DIMINUTIVE FRESH-WATER CRAB.

A very small crab is often found under stones in brooks.

ကြောက်ကန့်၊ ဇွဲဟံ၊ ဆွဲညာ်ဆဲး၊

LARGE RIVER CRAYFISH.

A large species of crayfish, about nine inches in length, resembles in form the smaller one. The rostrum has precisely the same number of serratures, but the hands are much longer in proportion, being equal to the whole length of the animal from the apex of the rostrum to the foot of the tail, and is armed all over with strong thorns.

Astacus.

ပုန်တောက်၊ သမိန်ကိ၊

SMALL RIVER CRAYFISH.

Fresh-water lobsters, or river crayfish, are very abundant in our streams, and are constantly seen for sale in bazar. They resemble very much the English crayfish, but the rostrum has many more teeth, especially on the upper side. A small species is common, in which the hand is equal to the length of body from the posterior of the rostrum to the tail.

Astacus

ပုန်တောက်၊ သမိန်၊

BROAD-ROSTRUM CRAYFISH.

A very minute species of crayfish, remarkable for a broad rostrum, is very abundant in our rivers.

Astacus.

ပုန်မိတ်၊ ဘေ့၊ သမိန်မိမိ၊

FRESH-WATER SHRIMP.

Another small crayfish, or fresh-water shrimp, as it is sometimes called, is common in the mountain streams.

Gammarus?

ပုန်ရေဆွဲ၊ ဘေ့မာ၊ သမိန်တူရ၊

M I *

SEA MANTIS.

A curious shrimp-like crustacean, nearly allied to *Squilla mantis*, is common on the coast. The Karens call it water centipede.

Squilla.

ဝဲဟဲ့ဝဲဟဲ့. ဒီးဘိတ်.

HERMIT CRAB.

This is the crab that takes possession of empty shells which seems to be necessary for its existence, "the posterior portions of the body being unprotected by a firm crust." They may be often seen running on their claws with their borrowed clothes on their backs, and many persons suppose that they are the formers of the shells they inhabit. One gentleman that I tried to convince to the contrary, assured me that I was mistaken, for he had examined the animal and found its posterior parts adapted for the shell, so that there need not be a doubt but that it was born in it!

Pagurus.

ပရိုဂတ်. မိန့်လဲန့်န့်န့်.

SOW BUG.

The sow bug is seen under stones in damp situations, but is not so abundant as in Europe and America.

Oniscus.

KING-CRAB.

The king-crab, horse-shoe, or sauce-pan-fish, apparently identical with the species on the American shores, is not uncommon on our coast.

Limulus.

လွင်. လွင်.

BARNACLE.

Barnacles, which till recently held a place among the conchifera, are now classed with the crustaceans. They abound among the rocks on the sea-coast.

Balanus—Ibla.

ခရင်း. ခရင်း.

ခရင်း.

ANNELIDA.

Besides the worms that are common to all parts of the world, there are, among the annelides of the Provinces, guinea worms, hair worms, land leeches, water leeches, and the serpent-shaped shells.

EARTH-WORM.

The common earth-worm appears to be as abundant in these Provinces, as in Europe and America.

Lumbricus.

တိ. ဇာနည်. ထီးကလံ.

INTESTINAL WORM.

A large intestinal worm, which often finds its way into the stomach, is very troublesome to the natives, owing to their indigestible diet.

Vermes.

သန့်. ဇာနည်ဒေါဟုဝေဟံ.
ထီးကလံအိဉ်လာဟဟဟဟ.

GUINEA WORM.

The ancients were acquainted with the guinea worm, or *dracunculus*, a worm which shows itself in the flesh of the human body, producing disease, and if not extracted, death. On this, as on many other subjects, our knowledge appears to have been stationary for many centuries. "Some speak of it," says Dr. M'Clelland, "as an *animalcule*, some as an *insect*, and some deny its being any thing more than a *detached ab orbent vessel*, or a *nerve*." The animal shows itself externally by protruding its tail through the skin; and when in the process of extraction the animal is ruptured, a fluid escapes, which has long been known to aggravate the disease, and fatal symptoms often ensue. It has been recently discovered that this milky fluid consists "almost entirely of young animals, perfectly formed," which satisfactorily accounts for the in-

creased diseased action of the ulcer which follows, when this fluid enters the ulcer. Persons affected with the guinea worm are occasionally seen on this Coast, but Dr. Morton informs me that in every case that has come to his knowledge, the patients were from the Madras Coast. Still, the disease may be communicated to others, for it has been observed "that attendants on patients, and *dogs*, moving about them, get the disease," the young no doubt affixing itself to the flesh of persons with whom it comes in contact and working itself in by the "fine sting-like extremity" of its tail.

Dracunculus.

HAIR WORM.

I have sometimes met with a long filiform white worm which I judge to be a species of

Gordius.

LAND LEECH.

Land leeches are very troublesome when travelling. I have had often to rest by the way, and pull off ten or a dozen from my person. On some individuals they produce bad ulcers; and during the Burmese war many of the Sepoys were disabled from their wounds.

Hirunda.

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WATER LEECH.

Water leeches are abundant, but the Karens say they are never found in the streams that are not visited by buffalos; and so far as my observation extends, they are not found in the streams where there are no domestic buffalos.

Hirunda.

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SERPENT SHELL.

The small serpent-shaped shells, usually found coiled on other shells, were formerly classed with moluscus animals, but modern naturalists regard them as worms.

Spirobis—Serpula.

RADIATES.

The *Radiates* include the echinoderms, the aculephs, and the polyps.

ECHINODERMS.

The echinoderms embrace on this coast two or three species of sea-slugs, or beche le mer, several species of sea urchins, and two or three star fishes.

SEA SLUG.

Several species of sea-slug, trepang, or holothuria, are found on our Coast. They are particularly abundant in the Mergui Archipelago, where they afford employment to the Selungs, who cure large quantities and sell them to the Chinese.

Holothuria.

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SEA-URCHIN.

A small animal with a solid covering beset with spines, called sea-egg, sea-chestnut, and sometimes sea-urchin, is common on the coast. There are probably several species, but my specimens are not complete enough in their spines to allow me to identify them satisfactorily.

Echinus.

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OVAL SEA-EGG.

An oval species of sea-egg with "four leaf-like impressions diverging from the mouth," is more rare. It has a slightly elevated ridge on the under surface, and a pointed and sharp edge at the stern, bearing some resemblance to a vessel.

Spatangus ?

WHITE LOURIE-STAR FISH.

This is a fragile circular shell two inches or more in diameter, slightly elevated in the centre, with a five-rayed star extending to the margin on the under side, and "a

petaloid star" occupying half the diameter, punctured on the upper side. I imagine it will be found identical with

Echinarachnius conchatus, M'Clell.

BROWN DOUBLE-STAR FISH.

A brown species, with divergent, ambulacra on the surface, extending to the margin; and three concentric pentagons, described on the under surface, I have met with occasionally, which belongs I think to the genus

Scutella.

STAR FISH.

The star-fish or five-finger, destitute of a shell, is common on the coast,

Asterias.

ACALEPHS.

The acalephs, or sea nettles, are numerous represented in our waters, from the phosphorescent animalcule which gives brilliancy to the waves in a dark night, to the sea-jelly more than a foot in diameter.

MEDUSA.

Sun-fish or sea-jelly, as they are often called, are frequently thrown on our shores, some of which are of great size,

Pulmonigra acalephæ.

?

PORTUGUESE MAN-OF-WAR.

The well known Portuguese man-of-war, belonging to the *Physograde acalephæ*, may be often seen on the waters that wash our shores.

Physalis pelagica.

POLYPS.

The polypi on our coast embrace sea-anemonies, numerous species of coral, and a few sponges.

SEA ANEMONY.

Affixed to many of the rocks washed by the sea, may be seen several species of those curious flower-shaped animals called sea-anemonies.

Actinia.

CORAL.

Though ours are "coral strands," with a great variety of both horny and stone coral scattered over the beach from Amherst to Mergui, yet elegant specimens are very rare. Prof. Agassiz, in his recent examination of coral animals, demonstrates that they possess the same structure as the naked polypi; and remarks: "We have all the details of structure which actinia present in a miniature form in astrea."

BRAIN CORAL.

A species of coral with sinuous ridges, popularly denominated brain coral, is occasionally washed up on the beaches of the southern provinces.

Miandrina.

CLUB-SHAPED PORITES.

A species of coral in obtuse, club-shaped lobes, the surfaces covered with minute stars, is not uncommon, and is nearly related, if not identical, with the club-shaped porites of the American seas. There appear to be also one or two other distinct species.

Porites clavaria?

ISIS.

I have noticed in the bazars, though I never gathered it on the coast, a curious species of coral resembling the horse-tail isis. It is branched like a tree with white striated stoney joints, and black horny smaller joints between, which render the whole flexible.

Isis hippuris?

ESCHARA.

An exceedingly fragile species of coral, with large spaces between broad expansions, is common.

Eschara?

FUNGUS CORAL.

A species of coral, resembling in form a large fungus, is occasionally seen.

Fungia.

SCARLET CHAIN-CORAL.

A scarlet coral, composed of cylindric tubes united together, is occasionally found.

Tubipora musica.

STAR CORAL.

Star coral is more abundant than any other on the Coast, and there are several distinct species, some fine specimens are studded with large embossed stars, others sculptured with regular indented stars, and others printed with minute meshes, giving it the impress of a bundle of lace.

Astrea.

TREE CORAL.

A considerable variety of tree coral is abundant on the Tavoy coast, some of the specimens very beautiful, presenting superb sea-groves of various hue and form.

MOSS CORAL.

A handsome coral, like a tuft of long moss-like branches, belongs I think to the genus

Dynamena.

BLACK CORAL.

Black coral, of which beads are often made, is brought from the Mergni Archipelago.

Corallium.

TENASSERIM RED CORAL.

A tree coral two feet long, of a deep scarlet, is found on the Coast, which the residents often call red coral, but it is not the red coral of commerce; it does not grow like that, and the red colour is confined to the epidermis, the substance of the coral within being grey.

SPONGE.

Sponge of more than one species is found among the corals, and one species appears to be nearly as valuable for practical purposes as the sponge of commerce. Many modern naturalists regard the sponges as of vegetable origin; but it is convenient to give them here a place.

Spongia.

ETHNOLOGY.

One hundred and one nations are said to have surrounded the first Buddha, when he propounded the letters which constitute the languages of all nations. This number is frequently mentioned in the Burman books as composing the sum of all the races of men ; but in no place have I found the them enumerated by name, though they are sometimes divided into four classes, of which seven are Burman, four Talaing, thirty Shan, and sixty Foreigners. Observation shows that the races in the Burman empire impinge on the Shan family on the east, the Malay race on the south, the Caffre and Hindu races on the west, and the Thibetian and Chinese races on the north.

Within these limits are embraced a great variety of tribes, with a still greater variety of appellatives, but which may be reduced to a very small number of distinct nations. At the southern extremity of the Tenasserim Proviuces, in the Mergui Archipelago, is the Selung nation, an offset of the Malay family. North of this people range the Burmese, Talaings, Tounghthus and Karens ; in all, five distinct nations at home, in these Provinces. In Burmah Proper there are in addition, the Kakyens or Khukeens, whom the Rev. Mr. Kincaid, who has travelled among them, regards as a tribe of Karens ; and the Kyens, who have some traditions among them identical with Karen traditions. Add to these the Kemees, a small hill tribe in African, and a few still smaller tribes probably of common origin, and we have the total of the Burmese nations.

TALAINGS.

The Talaings, as they are called by the Burmese, or Moans, as they denominate themselves, or Pegnans, as they are often designated by Europeans, from the city of Pegu, their ancient capital, appear to have been the original inhabitants of provinces Amherst and Yay, so far as we have any light from history or tradition ; and they are cer.

tainly as ancient as the oldest towns and villages, because their names are significant in Talaing, but they are not significant in other languages.

Pegu appears to have been known in Central India as early as the rise of Buddhism. Burmese history states that Bindusara¹ who reigned in Palibothra, had many wives, who bore him one hundred and one sons, one of whom, Dammasoka, was ruler of Oujein,² distant one hundred yuzanas from Palibothra; and at his father's death, according to one account, he usurped the throne and killed ninety nine of his brethren, sparing only one, Tiktha or Tesha,³ his own brother; but according to another account, ninety eight of his brothers were slain by their brother Sumana, who subsequently came against Dammasoka, by whom he was taken prisoner, and put to death.

Twenty years after the accession of Dammasoka to the throne, A. C. 308, the third great Buddhist council, or Missionary Convention, convened in Palibothra, which consisted of six hundred thousand rahans or devout priests, from whom a chosen hundred recited the present Buddhist scriptures, or Betagat. These rehearsals occupied nine months, after which the council rose, A. C. 308 or 307. From Pali inscriptions in Hindustan, as well as from history, we learn that at the close of this great ecclesiastical synod, the president of the convention commissioned a considerable number of priests to proceed on a foreign mission, for the propagation of Buddhism in distant lands. Ouktara and Sauna,⁴ two of these missionaries, were designated to Suvannabumme,⁵ or the country of Satung. Talaing history says that they came immediately to Thadung, Thatung, or Satung, the ancient metropolis of the Talaings, or Tounghthus, the ruins of which still exist between the mouths of the Seetaing, and Salween rivers; the same city which a few centuries subsequently sent a missionary to Ceylon, to learn more perfectly the doctrine of Buddha, and to procure copies of the Buddhist bible.

¹ ဝိညာဓိ ² ဝုဇ္ဈိ ³ တိဿ

⁴ ဝုတ္တရသောဏာ ⁵ သုဓဏ္ဍာဒိ

That the country was known to the western nations of antiquity, will hardly admit of a doubt. Almost the first word that meets the eye on ancient maps of this Coast is Talaing. Besynga is the name attached to the Salwen river, and to a town near its mouth; and *be* is the word for river in Talaing, and *Be-khung* of the Salwen river, which taken into Greek, would, with the regular changes, become *Bekhynga*; a name nearly identical with Ptolemy's Besynga.

Suvanna-bumme is still the classic Pali name of Satung. *Bumme* signifies earth, place or site; and *suvanna*, gold; so that the name is literally "place of gold." The ancient name of Maubee, in the delta of the Irrawaddy, was *Suvanna-nadee*,⁶ or "river of gold;" indicating that Pegu was famous in antiquity for its gold; and gold and silver appear to have been much more abundant than they are now, even three centuries ago. Cæsar Frederic writes of the vessel in which he left the country: "Save victuals and ballast, they had but silver and gold, and no other merchandize."

Josephus says that the country from which Solomon procured his gold was "anciently called Ophir, but now the Aurea Chersonesus, which belongs to India;" and Dr. Taylor observes: "The country designated by Ptolemy the golden Chersonese, is now generally admitted to be Pegu." The Sanscrit form of *Suvanna*, the name of Sa-tung, is *Suvarna*; and this, when the final syllable is dropped,* is nearly identical with *Soupheir*, the Greek name of Ophir; nearer, certainly, than the Greek to the Hebrew, which we know to be of common origin.

According to a Buddhist legend, Gaudama visited this city. Being on a tour to the Talaing kingdom, he attempted to land at Martaban, but was treated very rudely, and

⁶ သုဝဏ္ဏနဒီ.

* It is not uncommon to meet with a Pali name differing from the Sanscrit form, by an additional syllable. Thus Yau-na is the Sanscrit name of Greece or the Greeks, but in the Pali Books it is written Yan-na-ka where it is mentioned as one of the countries to which Dammasoka's missionaries were sent. The root is the same as the Javan of our English Bible, the Ionia of the Greeks, and the Yawan of the Hebrews.

* ငယာနကံ.

stoned by the Nats and Beloos who inhabited the country. Theremathauka, however, the king of Satung, received him with honors, and paid him great reverence. It is also incidentally mentioned that at the period of this visit, Tavoy and Mergui were inhabited only by Nats and Beloos. From this concatenation of testimony, derived from various sources, it would appear that several centuries before the Christian era, there existed at Thatung a people who were then deemed civilized, while they were surrounded by tribes regarded as barbarous, for Beloo is a term nearly equivalent to wild man.

I find the Talaings mentioned incidentally in connection with the establishment of the Burman Empire at Pagan, A. D. 107; and in Phayre's history of Arracan they are said to have had possession of Sandoway eight years subsequent to A. D. 338. Both Burman and Talaing histories state that Bugdagautha, a citizen of Thatung, went to Ceylon, and returned with two copies of the Burmese sacred books, A.D. 387. Arracanese history introduces the Talaings again, A.D. 464, as bringing one hundred thousand men into the field to replace upon the throne the exiled king of Arracan.

In the next century a dragon is said to have come out of the gulf of Martaban in the form of a beautiful woman, and in process of time her daughter became queen of Thatung, and bore two sons. These princes, Thamala, and Wemala,⁷ were robbed of their right of succession to the throne after the death of their father, by a usurper; and to save their lives they fled with one hundred and seventy followers, and founded the city and kingdom of Pegu, A.D. 573. From this period "the great country of Thadung," as it is denominated, declined, and appears to have been soon absorbed in the kingdom of Pegu. Capt. Phayre on the authority of Arracanese history, gives Thodun as the name of an original race in Chin-India, that were subsequently united with the Talaings; and which can be no other but the inhabitants of Thadung.

Tradition says that in the age of Gaudama the site of

⁷ သမ္မလ္လံ ဝိမ္မာနံ

the city of Pegu was covered by the ocean, and that its first appearance was that of a sand-bank. Situated as it is on the alluvium in the delta of the Irrawaddy, this tradition may not improbably be founded in truth.

Seetoung, it is said, was built on the east side of Seetoung, or Seetkaing river, fifteen years after the founding of Pegu, A. D. 588; and several other Peguan towns of less note were also founded during the life time of the two royal fugitives, the last of whom, Wemala, died A. D. 592. He was succeeded by his son Katha, who was remarkable for his attachment to Buddhism. He built monasteries, and zayats; excavated tanks, and made offerings to the priests; created peace and happiness among his subjects, and died after a quiet reign of seven years, A. D. 599.

King Katha's son,^a a minor of sixteen years, succeeded, under the regency of one of his father's ministers, who also had great reverence for the Buddhist scriptures, for the hairs of Gaudama, and the other relics. He also built many pagodas and monasteries; made great offerings, and was filled with the twenty eight virtuous deeds. All the surrounding nations were at peace with him, and the wild beasts of the forest committed no depredations. He is said to have built the city of Lagoon, A. D. 600, on the site of an old city of the same name, and which must therefore have been older than Pegu. In the succeeding reign, "the thirty two cities of Bassein" were tributary to Pegu, which gives to Bassein the higher antiquity, although a writer in the "Maulmain Chronicle," a few years ago, places the foundation of Bassein, A. D. 1304; and the cities of Pegu five hundred years later than the dates given above.

Several succeeding sovereigns are lauded like the preceding for their piety, and this is nearly all that the historian has to say concerning them. His work is more of a homily than a history. Pungnareka* was anointed king A. D. 736, and he governed in accordance with the di-

^a ဗိဟိယာသိန္ဒရာဇာ။

* ပုဏ္ဏာသိကာ။ A Pali name, signifying Bramin-heart.

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vine law, studied the Buddhist scriptures, and attended constantly with his queens, concubines, and courtiers, on the preaching of learned teachers and holy priests. He put in his heart the blessed law of thirty eight divisions that god preached, which the historian says are these : Doing good, avoiding evil, and drawing near to the three great objects of worship, god, the law, and the church ; listening to the words of good men, distributing gifts to good men, wise men, and wise counsellors ; making offerings to the three great objects of worship ; drawing near to the place of the three great objects of worship ; abounding in happiness in the present state, in consequence of meritorious deeds performed in a former state ; governing the inhabitants of the country with love, compassion, and pleasure towards others, but with denial of self ; studying the Buddhist scriptures, the vedas or works on science, the laws of Menoo, and works on astrology ; not ceasing to act as former good rulers did, and governing the people with care ; chastening the body, the mouth, and the heart, and performing good deeds ; believing and receiving readily the words of good men by constantly laying the law to heart ; reverencing, and supporting priests constantly ; causing wives and children to acquire the habit of practising according to the law of good men ; not performing unmeritorious deeds connected with hell, but attending only to good and meritorious works ; making offerings and giving gifts constantly to holy priests, bramins, and the inhabitants of the country ; observing the law ; preaching, teaching, and giving to debtor slaves ; not supporting life by falsehood, but according to the law, supporting life by such property as we possess ; sifting property so as not to transgress the five laws ; before property is obtained, exercising diligence to obtain it ; not drinking spirituous liquors to intoxication ; not forgetting a good law ; not persecuting, but honouring holy priests, old men, wise men, and wise counsellors ; not persecuting or humbling holy priests, old men, parents, or wise men ; being exempt from pride, and constantly exercising humility ; not forgetting the favors of persons who show favor ; listening to the law on suitable days ; exercising patience when hearing the law ; listening readily to the words of good men, and giving

gifts ; looking up to teachers of god, to the law, and to the church ; speaking the words of the law on suitable days ; conducting according to the law with reference to the good recompense ; laying the law to heart on a good day ; laying to heart the four truths of the law ; observing the good law in order to making present nibban and the way thither ; conducting so as to be exempt from desire, anger, fear, and darkness ; conducting so as not to give trouble to wives, children, or domestics ; not exhibiting by force the young women of the country ; avoiding connection with women on a good day.

Such were the characters of the monarchs who reigned over Pegu for sixteen generations, occupying, it is said, nearly five hundred years ; but the history of the seventeenth king, * Tektha the Pantheist, is a true oriental romance, and he is said to have wrought one of the most remarkable changes ever recorded in history. This monarch abjured the faith of his fathers, and embraced the pantheistic doctrine, that God is in every thing in the universe, or the universe itself. The same doctrine which had overspread India, Greece, and Rome, and at the present day re-appears in the popular form of idealism, and which is cherished by a sect still existing among the Talaings, who reject the worship of images.

Tektha discarded altogether the Buddhist scriptures, pagodas, and relics ; paid no reverence to the priests, or wise men, but demolished their temples, threw the idols into the waters, and prohibited his subjects from worshipping them on pain of condign punishment.

The kingdom of Kathee, says the historian, throughout its length and breadth, was filled with fear and trembling ; and the inhabitants of the Three Places of the kingdom of Promé dreaded king Tektha's edict. Matters were in this state, the whole great kingdom of Pegu in utter consternation, no one daring to worship idols, build zayats, reverence relics, or make offerings to priests, when there arose a Defender of the Faith in the person of a young maiden,—a Joan of Arc. This girl, who was

but twelve years old, the daughter of a weakly citizen, kept with her mother the five laws, revered the three great objects of worship, and exercised constant faith in the law. She said: "The king has thrown the idols into the water, because he is afraid of them."

When she was sixteen years of age, she went out one evening with her maidens to bathe, and while amusing herself in the water, she perceived an idol. She immediately ordered it conveyed to a zayat, and although informed that death would be the consequence, she expressed her determination to worship it as long as she lived. The idol was accordingly taken from the water, washed, and placed in a zayat. Thus, probably, originated the Peguan festival of annually bathing the idols, and pagodas.

While this fearless young woman was engaged in cleansing the idol, a government officer arrived to call her before the authorities, and soon after a second, such was the excitement of the occasion. These officers both reported that they found the wild girl worshipping beneath the discus of ¹⁰Indra, the discus of Vishnu, the discus of Kelawaka, and the discus of Rama. The king was greatly enraged, and commanded that a fierce elephant be instantly sent to trample her to death. But the young devotee placed herself under the protection of god, the law, and the church; and according to the historian, was preserved by the seven principal nats. The nat which presides over the universe, the nat which presides over the earth, the nat of the trees, the nat of the air, the nat of the cities, the nat of the villages, and the nat of the white umbrella.

The elephant was goaded, and beaten, and every possible measure used to induce it to trample upon the girl, but all in vain; the animal refused to raise a foot, but constantly fled from her, as if inspired with awe by her presence. The king then ordered the damsel to be covered with straw, and burnt alive, which was accordingly done, and every possible effort made to set the straw on fire, but it would not burn, and the executioners were obliged to relinquish their task.

¹⁰ သိကြာမင်း၊

When this was reported to the monarch, he commanded her to be brought to the palace, and on her coming before him, he said: "If the image which you have dared to take from the water will come through the air into my presence, and I see it, your life shall be spared, but if not, you shall be cut into seven pieces."

The young woman besought time to return to the *zayat*, which was granted, and after praying earnestly to god that the image might proceed miraculously into the presence of the king; through the agency of the nats, lo! eight images, with the young woman herself, and all her attendants, were carried through the air beneath the divine discus, and placed before the king. The king saw the miracle, with his principal queen, the commander-in-chief with his officers, and the inhabitants of the country, all of whom wondered, and shouted.

The wily damsel then proposed, that, as the images of her teacher had, in the sight of the king and his court, gone through the air in a miraculous manner, that the king's teachers should exhibit a similar display of power in their own persons. To this the king assented, and commanded the *Dektedekhatoon* teachers to fly through the air in the presence of the people. This they were unable to do; and the king, therefore, compelled them all immediately to leave the country, after which he elevated the young defender to royalty by making her one of his principal queens, and became a devoted Buddhist.

At the death of *Tektha*, after seventeen *Talaing* kings had reigned in *Pegu*, a dynasty of three generations of *Pyu* or Burmese monarchs, whose capital was at *Pugan*, ruled over *Pegu*.

It was during this era, while the Burmans governed in *Pegu*, that *Martaban* first appears in the annals of history. *Narawadesæthu*, who reigned in *Pugan*, and died in 1269, founded *Martaban* in the latter part of his reign, "on a rocky promontory," as it is stated, "with the country of the *Shans* on the east, and the sea on the west," and planted a colony of thirty families on the point, "to take care of the pagoda." This remark shows that at that period these Provinces were regarded as a part of the

Shan country. Narawadesmthu was succeeded on the throne by his son Nandaraza.

This king, as soon as he was seated in the chair of state, ordered Alingma, the governor of Martaban, to appear at court; but the governor, fearing the king, refused to obey; and when the young monarch heard of his contumacious conduct, he forthwith ordered troops to Martaban to bring the governor up by force. When Alingma heard of the approach of the king's soldiers, he fled into the Shan country, to the city of Lasung, thinking that the Burmese would not dare to enter the Shan and Laos territories; in which conjecture he appears to have been correct, for the king of Pagan did no more than appoint a new governor, Talapya, to fill the vacancy.

Alingma proceeded to Zimmay, and after swearing allegiance to the king of Zimmay, solicited and obtained troops from him to return and take Martaban. On their approach the new governor fled, but the Shans pursued, took him, and put him to death, and the place where he was slain is called Talapya to the present time. After the Shans had taken Martaban, they delivered it into the hands of the old governor, and returned to their own kingdom.

A remarkable character now appears in the history of Martaban, like whom one only is usually found in the annals of a single nation. His name was Magadu, a man who commenced life as a travelling merchant, his father being also a merchant in the city of Dungwon, his native place; a town, the remains of which are said still to exist in the valley of the Salwen, some fifty miles above Moulmain.

Magadu, with thirty followers, having started out on an expedition to Siam, was ascending the dividing mountains, when suddenly there arose a storm of rain, thunder, and lightning, attended with many remarkable sights, all of which Magadu interpreted to portend remarkable things concerning himself. He and his party however passed on unharmed, and descended the mountain on the eastern side to Nedung, where resided many priests and Brahmins. In this village there dwelt a learned man, or seer, who con-

firmed his supposition that the signs seen on the mountain were sure presages of his future distinction in the world.

He then proceeded to the city of Thoukkatay,¹¹ where he sold his goods and dismissed his followers; the latter returning to Dungwon, while he himself remained in Thoukkatay, where he entered the service of the person who had charge of the king's elephant.

He was subsequently taken by the king into his own service, who, loved by him as his own son, and when an army and fleet of foreigners came and made war upon the extremity of the kingdom of Thoukkatay, the king went out with an army to meet them, and left Magadu invested with great power in the city.

But while the king was absent in his wars, Magadu eloped with the princess the king's daughter, and took up his residence in Dungwon his native city, where he soon made the acquaintance of Alingma, the governor of Martaban. They met ostensibly for a friendly conference, on a sand bank on the Salwen river, each with a large party of followers; and when Alingma and his people had drunk to intoxication, they were all slain by Magadu and his men, who proceeded immediately to the city, took it, and Magadu, who, according to the legend, was one of the Belooos that met Gaudama on the rocky promontory to obstruct his landing, now became king of Martaban A.D. 1281. Soon after taking possession, he rebuilt the city on its present site, and having sent an embassy to his father-in-law, the king of Siam, he succeeded in winning back his favor, and received from him an honorary title for which he had petitioned. He was accordingly ever after designated in the chronicles of his reign as King Wayærau,¹² the appellation conferred upon him by his father-in-law the king of Siam, and this is the name which he bears in Burman history.

To the north of Martaban was a country called Kanpalane¹³, and on one occasion the king of that country having gone into the jungle on a hunting excursion, Magadu sallied forth, and made a forray into his dominions, took

¹¹ သက္ကတိ

¹² ဝေရေရာ

¹³ ကန်ပာလာနိ

his capital, the city of Kanpalane, pillaged it of all its valuables, and carried the king's daughter away captive to Martaban. When the king of Kanpalane returned and found his city sacked, he assembled an army and proceeded to attack Martaban; but here again Wayærau's superior finesse enabled him to gain the victory, and the king of Kanpalane died by treachery.

While Wayærau was thus reigning with great power in Martaban, Akhyæman,¹⁴ who, on ascending the throne had taken the name of Tarabya,¹⁵ was king of Pegu. The two kings sent ambassadors to each other, entered into a commercial treaty, and opened "a gold and silver road" between the countries, by which merchants and poor people were enabled to sell their goods. The Pegu monarch gave his daughter to Wayærau who returned one of his own, and so they lived in peace.

About this time the emperor of China having subjugated Pagan, his troops with the Burmese entered Pegu and invested several cities. Tarabya immediately wrote to the king of Martaban for assistance, who responded to the call without delay; and the united armies succeeded in driving the invaders out of the country, and taking several of the Burmese towns and villages, all of which the king of Martaban spontaneously gave up to the king of Pegu. Tarabya could not, however, appreciate his generosity, and laid a plan to attack and destroy Wayærau with his whole army; but he was defeated in his nefarious designs, was taken prisoner, and would have suffered death, had it not been for the intercession of a holy priest, through whom his life was spared; but Wayærau annexed the kingdom of Pegu to his own dominions. After a brief interval, Tarabya was discovered in a conspiracy against the king's life, he therefore suffered death; and thus the kingdom of Pegu passed back from the Burmese to the Talaing sovereigns, A. D. 1287.

But what is regarded by the native historian as the crowning glory of Wayærau's life, is, the success which

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¹⁵ တရဘျာ.

attended his efforts to obtain a white elephant. Six years after he became king of Pegu, A. D. 1293, he became possessor of a white elephant, and added to his titles that of, "Lord of the white elephant." The subsequent part of his reign was marked by uninterrupted prosperity; but he educated in his own family two of Tarabya's sons, his daughter's children. When these boys grew up they did not remember their grandfather's kindness to them, but his severity towards their father, and they assassinated him, A. D. 1306. The king erred, says the historian, in not observing the words of the wise men of old—"When you cut down a ratan plant, leave not a thorn; when you cut down a reed, leave not a shoot."

Magadu was succeeded by his brother Krunglau, and during his brief rule Maulmain is first mentioned, and appears to have formed at that period a part of the Martaban Kingdom.

King Krunglau was informed that the Karens reported a rare elephant to have been seen in the jungle, with three tusks, one upon the head. He was therefore induced to leave his palace and cross over into Maulmain, in search of it. But no sooner had he left the city than the gates were shut against him, and he was speedily taken and executed in one of the villages, A. D. 1310. A revolution followed, when the king's brother-in-law took the reigns of government; but he made his own son, Zauaubenhmaing,¹⁶ the nephew of the deceased monarch, king; and under his reign the boundaries of the kingdom of Martaban were widely extended. He subjugated Labong, in the Shan states, A. D. 1320; and on his return to Martaban he dispatched an able general, Kungmen,¹⁷ with an army against Tavoy and Tenasserim, both of which places were taken the following year, A. D. 1321. After two years of peace the king died, A. D. 1323, leaving the kingdom in a most flourishing state to his brother Zau Zeik.¹⁸

This prince on being annointed king assumed the title of Byanyaranda, or Byanyalau.¹⁹ Shortly after he as-

¹⁶ ဇော်အောင်တင်မိုး။ ¹⁷ နောင်။ ¹⁸ ဇော်မိုး။

¹⁹ ဗျာညာရန်ပါ၊ ဗျာညာထော်။

cended the throne he proceeded with his suite to Pegu, and from Pegu to Takung,²⁰ from Takung to Dala, and from Dala to the city of Piengdau;²¹ whence he returned to Pegu, where he built a new palace. He appears to have met with no opposition in his progress, but while residing in Pegu he had to send an army to quell a rebellion in Bassien, and another to Tavoy and Tenasserim; and on hearing that an invading army was approaching from Siam, he returned to Martaban, where he died, A. D. 1348.

The history of Martaban after this period is absorbed in that of Pegu, and passing over a century, we find a Talaing general, Thameinparau, offering the king of Pegu, with forty thousand men and a particular elephant, to march to the frontiers of China, and erect an iron post there, as the boundary of the Peguan empire. This he effected A. D. 1477; but was taken prisoner by the Burmese on his return. Maulmain was probably a place of some importance at this period, judging from an inscription on the large bell near the great pagoda, which states, that "Thengathoora was ruler in Maulmain, A. D. 1527, under whose direction the bell was cast."^{*}

Half a century subsequent to this date, we have a gleam of light from M. Cæsar Frederick, a merchant of Venice, who traded in the east from A. D. 1563 to A. D. 1581. He wrote: "We found in the city of Martaban ninety Portugal merchants, and other base men which had fallen at difference with the governor of the city. The king of Pegu had gone with a million and four hundred thousand men to conquer the kingdom of Siam;" and during his absence the Portuguese in a quarrel killed five of the natives. The king, when he was informed of the murder sent word to the governor of Martaban, to have the aggressors kept until he returned, but "the captain of the Portugals would not deliver these men, but rather set himself with all the rest in arms, and went every day through the city marching with his drums and ensigus displayed. For at that time,

²⁰ တကုန်။

²¹ ဝိဇ္ဇိတဝေ။

the city was empty of men, by reason they were all gone to the wars." In a short time the governor of Martaban obtained aid from Pegu, and with his elephants pulled down the ware-houses of the Portuguese during the night, who immediately fled to their ships; but they landed again and set fire to the houses in the suburbs, with which half the city had like to have been burned. The next morning, the Portugals began to bend and shoot their ordnance against the city, which battery of theirs continued four days; but all was in vain, for the shot never hit the city, but lighted on the top of a small hill near it, so that the city had no harm."

The king of Pegu to whom Cæsar Frederick refers, appears to have been a prince of Toungno of Burmese descent, who conquered Pegu, and who is called in Burman history, Tshenbyumyashen, Lord of many white elephants. Burney says: "This great king of Pegu after conquering Ava, Mogoung, Zimmay, Theinni, &c. A. D. 1562, sent a large army to the frontiers of China, and took possession of nine Shan towns, (Koshanpyi, or Kopyidaung), Maingmo, T'siguen, Hotha, Latha, Mona, Tsanda, Moroun, Kaingmah, and Mainglyin, or Mainglyi, all of which, with the exception of Kaingmah, are now, and apparently were at that time, under the dominion of China. The Peguans, after conquering the country, built monasteries, and pagodas, and established the Buddhist religion there, in its purity."

The king of Pegu rebuilt his capital A. D. 1567, and Cæsar Frederic was there when the city was finished. He says: "The streets thereof are the fairest I have seen. They are straight as a line from one gate to the other, and so broad that ten or twelve men may ride abreast, and those streets that be athwart are fair and large. These streets, both on the one side and the other, are planted with nut trees of India, which make a very commodious shade." He gives a glowing description of the king's palace, and the walls of the city with twenty gates, and the moat, "in which there are many crocodiles." The king had four white elephants, and four hundred thousand fighting men.

"Also he hath great ordnance, made of very good metal ; to conclude, there is not a king on the earth that has more power than the king of Pegu, because he has twenty-five crowned heads at his command; he can make up in his camp a million and a half of men of war for the field against his enemies. This king of Pegu has not any army, or power by sea, but on the land, for people, dominions, gold and silver, he far exceeds the great Turk in power and strength. This king has divers magazines full of treasure, as gold and silver, and every day he increases it more and more, and it is never diminished. Also, he is lord of the mines of rubies, sapphires, and spinal." The son of this great king lost all his father had gained.

According to the Siamese history, printed in the Chinese Repository, Naret, the king of Siam issued directions A. D. 1587, "to make preparations for an expedition against Martaban. Phychakris was therefore dispatched to Maulmain with 15,000 men, 100 elephants, and 200 horses. Five thousand men were also raised in Tavoy, as a reinforcement to Phychakris. The Peguans of Maulmain were subsidized in part, while part were employed in Siam." From this it would appear that Maulmain and Tavoy were tributary to Siam; and Tavoy history mentions that the king of Tavoy at Wadee afforded a contribution of men at this time to aid the king of Siam in his attack on Maulmain.*

In the following year the king of Siam himself came to Maulmain, with "100,000 men, 800 harnessed elephants, and 1,500 horses." Pinto, as quoted by Symes, appears to have been present when Martaban was taken. He says; "During this seige they of the city ate three thousand elephants; there were found six thousand pieces of artillery; and as for gold, silver, precious stones, and jewels, that were found there, one truly knows not what they were, for those things are ordinarily concealed."

After a succession of wars in which the Portuguese took part, Pegu was finally subjugated by Alompra, A.

D. 1757, and has ever since constituted an integral part of the Burman empire.

Tha-tung, and after that Martaban, appear to have been the most powerful cities on this Coast; and Maulmain seems to have ever been subject either to Pegu, Martaban, or Siam. The etymology of Maulmain is sufficient to prove its Talaing origin. It is from *moot*,²² eye, *mooa*,²³ one, *tem*,²⁴ destroyed; i.e. (the city of) *The one-eye-destroyed*. Tradition says, that the city was founded, or inhabited anciently by a king with three eyes, having an extra eye in his forehead; but that by the machinations of a woman, the eye in his forehead was destroyed, and thus the place obtained the name of the "One-eye-destroyed."*

This tradition suggests to the mind Siva, the Hindu god, who, like the king of Maulmain, is represented with three eyes, one in his forehead. Nor is this the only indication of an ancient connection with the Hindus and Hinduism. The Dongyan hills are called in Talaing, *kroa-ka-bang*; *kroa*,²⁵ to pull up, and *kabang*,²⁶ a ship; from the tradition that in ancient times the world was destroyed by a flood, when the whole human race was drowned, excepting one good man and his family who were saved in a ship; and when the waters subsided and the high point of these mountains appeared, he secured his ship to that point. This has no precise correspondence in the biblical account of Noah, but it has an exact counterpart in the Hindu notice of the first avatar of Vishnu, when he took the form of a fish, with a large horn rising out of the water, to which the good man tied up his ship.

The existence of a sect among the Talaings, who believe in the metaphysical doctrines of Hinduism, and re-

22 မတ်။

23 မှ။

24 မှ။

* The Pali classic name of Maulmain is Ramapura, the city of Rama; and Crawford says there was formerly a large Hindu city here, but that wants confirmation.

* ရာဇာဗုဒ္ဓ။

25 ကြ။

26 ကွန်။

ject the worship of idols, is another proof of an early, and intimate connection with the nations of western India.

The Talaing language, too, indicates a relationship with the natives of Hindustan; and the people themselves are the blackest nation that can be found in all Farther India. This was noticed by the first Europeans who came to the Provinces. An officer, detailing an account of an excursion he made up the Salwen in 1826, says of the Karens: "These people intermarry now with the Mon race, by which the latter will be improved, as the former have fairer complexions."

The Burman mission has been, from its first commencement in Rangoon, a mission to the Talaings, as well as to the Burmese, and several Talaings were among the members of the first Burmese church; but there are no statistics to show the number of Talaings that have been connected with the churches. The Rev. Mr. Haswell was especially designated to the Talaings in 1836, and before his return to America in 1849, he had raised up a Talaing church at Amherst of more than fifty members, translated the New Testament into the language, an epitome of the Old, and several tracts. He is the first American or European who has thoroughly acquired the Talaing language, and he has prepared in manuscript a small Grammar and Vocabulary.

• TOUNGTHUS.

"There is a people," wrote Capt. Foley, whose regiment was a few years ago stationed upon this Coast, "located in various parts of the *Bama* (Burmese) and *Shan* (Siamese) empires, who are distinguished by the appellation of '*Ton-soo*,' or '*Ton-dzon*:' they have a language of their own, and differ in feature, dress, and domestic manners from the inhabitants of the country in which they reside; they never intermarry with their neighbors, and assert their descent from '*a people who came from the north*;' they are an ugly, swarthy race; both men and women closely resembling the picture of the *Huns*, drawn by Gibbon, in his immortal history. Broad faces, flat noses, small eyes, short, squat, 'but athletic' figures, are the most prominent beauties. The men wear their hair

long in common with the *Bama*, but their dress, which is always of a dark colour, much resembles the garb of the Chinese: the women have a fillet of dark coloured cloth 'generally with a red or white border' tastefully arranged as a head-dress, and falling down over the back; a mantle of the same colour and material, extending from the shoulders to a little below the knee, is the only remaining garment. Their legs, which are extremely thick, are covered with a number of metal bangles; these, with the exception of earrings are the only ornaments worn by the females of the *Ton-soo* race.

"I am persuaded that these people are the descendants of the "TANJAU" described by Gibbon, *a remnant of the ancient Huns*!! preserved during a lapse of 1788 years uncontaminated with the blood of strangers!!

The Tounghthus are so called by the Burmese from *toung*, south, or mountain, and *thu*, person, signifying either southerners, or mountainers. They call themselves *Pa-au*. In Tavoy and Mergui they are known only as a tribe of pedlers. In province Amherst they have a few villages on the banks of the large rivers, but the great body of the nation is scattered over Burmah Proper, the Shan states, and even into Cambodia; but in the aggregate they cannot be a numerous tribe.

They represent themselves as formerly having a king of their own, the seat of whose government was at Thatung, a city which we have seen is claimed by the Talaings as their most ancient capital. Bugdagautha who first brought from Ceylon the Buddhist scriptures, they claim as their countryman, and say that he brought over two copies of the sacred books; and that the king of the Talaings demanded one copy of the Tounghthu king, and on being refused went to war, which resulted in the destruction of the city of Thatung, and the scattering of the Tounghthu nation unto the present time.

Their language has the greatest affinity with the Pwo Karen; half the roots being of common origin, and the least with the Talaing among the languages spoken around them; but it has some features different from all. There is a *v* in the language, a letter that is not found

either in Burman, Talaing, or Karen. It is commonly supposed that they have no written language, but they write their own tongue in the Burmese character with great facility. They do not always attach the same sounds to the letters that they have in Burman. Some of their vowel characters have two sounds as in English, and a few of their letters have Talaing rather than Burman sounds attached to them, yet these discrepancies appear to occasion very little difficulty in practice.

Having no theory to propound concerning their origin, I have inserted Capt. Foley's. Kosmos De Koros thought the Thibetians of common origin with the Hungarians; and the Tounghus are quite as probably a tribe of Huns.

No mission has yet been established among them, but Doct. Judson who preached to them through the Burman several years ago, baptized ten of their number.

BURMESE.

"The mountains," says Ctesias, "abound with trees hanging over the numerous streams which flow through them. Once a year during thirty days tears flow plentifully from them, which, falling into the waters beneath, coagulate into amber. These trees the Hindus call Sipachora. In the country about the sources of this river, there is a flower of a purple colour, which gives a dye not inferior to the Grecian, and even much brighter. There is also an insect living on these amber-bearing trees, the fruit of which they eat; and with these insects bruised, they dye stuffs for close vestures, and long gowns of a purple colour, superior to the Persian. These mountaineers having collected the amber, and the prepared materials of the purple dye, carry the whole on board of boats, with the dried fruit of the trees, which is good to eat." Dr. Taylor thinks the country here designated Assam, but there is no region known that answers to all these specifications, except the northern portion of Burmah, including the valley of the Kyendwen. There are the amber mines; there grows the *ruellia*, which produces the blue dye so generally used in Burmah, there is the lac insect, which furnishes the purple dye; and there, to this day, a dried

edible fruit is brought from China, called Chinese dates, or Chinese figs.

Ptolemy's "Mareura Emporium" was certainly a city of Burmah; and the Burmese histories first open out from the region of fable with the statement, that the ancestors of the Burmese tribes came down from the north, and founded the city of Maureya, on the site of the present town of Mueyen, which is located on a branch of the Irrawaddy, about one hundred and fifty miles north-east of Ava.

After a brief period Tagoung was built, and after that Upper Pagan, but the seat of government was ultimately established at Tagoung. Of this city considerable is said in the Burmese histories, but some of the statements are contradictory, and many are evidently fabulous; so that all that can be affirmed with certainty is, that Tagoung is the most ancient capital of the Burmese Empire known to history or tradition. One history represents that an early Tagoung was founded, before the days of Gaudama, and gives the names of thirty-three successive kings. It was during the reign of Binna,¹ the thirty third, that the city, it is said, was destroyed by the Chinese and Tartars from Sing,² and Gandala.³ According to this account Maureya was founded subsequently, and Tagoung was rebuilt about this period, and not originally founded, as is represented by some historians.

Other records give the names of seventeen successive kings, and during the reign of the last, Dammayaza,⁴ A. C. 503, the king's brother went into the forest to hunt a wild boar that had committed extraordinary ravages, and he ultimately chose the life of an ascetic. He had there with him an adopted daughter, who was seen after she reached the age of puberty by the king of Tagoung's son; and the interview resulted in marriage. Dwattaboung⁵ was the son of this couple, and he is said to have founded Prome the year after the meeting of the second great Buddhist council in Wethale;⁶ which it is well known, was held

¹ ဘိန္န² ဝိန³ ဂန္ဓလ⁴ ဒမ္မရာဇ⁵ ဝေသလိ⁶ နိဂ္ဂဟေဝါ

A. C. 443, in Vasali, a city on the Gandak, about twenty miles north of Patna. Crawford says: "The first seat of Burman government to which any allusion is made is Pri, or Prome;" which proves the difficulty of obtaining Burman historical books, or his assistants would have informed him better. He adds: "The seat of government is occasionally at Wethali, or Jaintye, also called Majima." But Wethali and Majima belong to the sacred history of Buddhism; the former, as the place where the second great council to rehearse the sayings of Gaudama, was held; and the second as the centre of the world, where the peepul grows, under which Gaudama entered the divinity.

Prome,⁷ then, according to Burman history, was founded A.C. 442, by king Dwattaboung. Five remarkable occurrences are said to have preceded its foundation. A violent earthquake, a point of land changed to a lake, the appearance of a new river, a mountain sunk into the earth, and the sea dried up in the country of Prome. Situated as this Coast is known to be, on the margin of a line of active volcanoes, stretching up from Sumatra through Barren island to the mud volcanoes of Ramree island, these notices may be the tradition of some violent convulsions of nature, to which Pegu was subjected in ancient times.

After a reign of seventy years, Dwattaboung was succeeded by his son Dwattayan. In the chronological table given by Crawford, he is said to have been succeeded by his son Batasena, in Majima; in the same table several of Batasena's successors are said to have reigned in Majima, till, reaching A. C. 373, Dwattayan is mentioned as reigning in Prome as above; but he is said to be the son of Bintusara, a king of Majima.

Dwattayan was succeeded by his son, who reigned twenty-two years; and he was followed by a son who was a pious and good monarch, and reigned fifty years. In the twentieth year of this king's reign, the third great Buddhist council was held in the city of Patalepoke.⁸ The time of holding this council is a well known epoch

⁷ သဝေခေတ္တ

⁸ ဟိတလိပုတံ

in Indian history, and occurred A. C. 308. The Burman Patalepoke is identical with the Sanscrit Pataleputra,⁹ the Sanscrit compound *r* being usually omitted in such cases in Pali, and the consonant doubled to compensate.¹⁰ This it is well known, was an ancient city near Patna, and identical with the Palibothra of the Greeks; a city which, in the days of Alexander, the historians say, was "The magnificent Palibothra, the Indian Babylon, superior in wealth and power to the Assyrian; the seat of the monarch, whose authority extended over all the Indian Peninsula, and who could lead into the field six hundred thousand infantry, thirty thousand cavalry, and nine thousand elephants."

Ranman,¹¹ the grandson of Dwattayan, ascended the throne A. C. 301. According to Crawford he was the son of D'harmasauka. After a reign of fifty years this bad king, as he is represented, died and was succeeded by his son Rekkhan¹² A.C. 251, who, Crawford tells us, was also a "son, or grandson" to D'harmasauka; in all this there must be some mistake, although it was probably in his Burmese copy. Rekkhan is said to have been very handsome, to have had many wives, and to have been a remarkable shot with a cross-bow. He reigned thirty one years, and was succeeded by his son Khanloun, A. C. 220; who died after a reign of thirty eight years. Khanloun's son and grand-son followed without anything worthy of note, but his great grand-son, There-reet,¹³ who came to the throne A.C. 118, was a very good, and learned man. In his reign religion and the arts particularly flourished, and he had six distinguished teachers, who wrote on history, and mathematics; and taught religion.

Tāpab,¹⁴ the next king, who came to the throne A. C. 114, was originally a poor student for the priesthood. The historian describes the cause of his rise thus: The priest his teacher hearing a cock that he petted constantly crying out, "the person who eats my head will become

⁹ ပဒုလိပုတြ။

¹⁰ ပဒုလိပုတ္တ။

¹¹ ရန်မန်။

¹² ရက္ခန်။

¹³ ထိရိရန္တိ။

¹⁴ တေပါ။

king," ordered his boy, the young student, to cook it for him. The boy when he cut off the fowl's head let it fall accidentally on the ground, and then thinking it unfit for his teacher, ate it himself, and became king accordingly.

In the seventeenth year of Tapah's reign it is stated that the doctrines of Gaudama were committed to writing in Ceylon. This event we know both from Ceylonese and Burmese history to have occurred A. C. 93, or 94. This monarch is represented as a good king, and died A. C. 60, when he was succeeded by his son Papeyan,¹⁵ who reigned sixty-six years, and died A. D. 7. It is noted that during his reign there was a great religious discussion in India. His son Ranmokka¹⁶ succeeded him, a good man, skilled in the Vedas,¹⁷ who died after a reign of fifteen years in A. D. 22. Crawford's table differs materially in the lengths of the last two kings' reigns from the document which I follow. Ranthinkha,¹⁸ the son of the last king, succeeded his father, and is described as being very black in face and person, with red eyes, and red eyelashes. He discouraged Buddhism, and reigned only three years, dying A. D. 25. Ranthinkha was succeeded by his son Ramunsalingda,¹⁹ an excellent, and religious king, who reigned fifteen years and died A. D. 40. His younger brother Bæringda²⁰ was his successor, who reigned twelve years. It is stated that he went to Tekkatho,²¹ where he became skilled in the knowledge of the Vedas.

Tekkatho is often mentioned in Burman books as a city in Hindustan. In the five hundred and fifty lives of Gaudama, the scene of more than sixty is laid in this place, and hence it becomes an interesting inquiry to know what place is here designated. Its Pali name is Tekkatheela,²² or Tekkaseela, and we know that *kka* corresponds to the Sanscrit *ksha*, so the Sanscrit name is Teksheela which was the famous Taxila

¹⁵ ပါပိရန်။

¹⁶ ရန်မုက္ခ။

¹⁷ ဝေဒဉ်။

¹⁸ ရသိန္နိ။

¹⁹ ရန်မုတ္တလိန္ဒ။

²⁰ ဘေရိန္ဒ။

²¹ တက္ကသိုလ်။ ²² တက္ကသီလ။

of Ptolemy, in the time of Alexander the Great, "the largest and wealthiest city between the Indus and the Hydaspes," and where he rested and recruited his army. It thus appears that in ancient times, there was more intercourse between Burmah and Hindostan than there has been since the country was known to Europeans.

Munsala,²³ son of Bæringda, succeeded to the throne, and after a reign of five years died A. D. 56. His successor, Pungna,²⁴ reigned only three years. His younger brother Thakha²⁵ then came to the throne, but died A.D. 62, and at his death ten vultures are said to have perched on the palace.

His son Thathee²⁶ who succeeded him, had no regard for Buddhism, and is therefore described by the historian as an odious looking, and evil disposed man. At his death A. D. 65, there were great earthquakes around the city, and the earth opened in large fissures, sending out streams of water. In Crawford's table this king is called Sa-k'hi. His brother Kannu,²⁷ reigned one year, and then another brother Kantet,²⁸ reigned three years, and died A.D. 69. Binza,²⁹ his successor, died A.D. 73, and was followed by Thamugdara,³⁰ in whose reign the era was changed. There appears to have been at this time a reformation in the calendar, for it is stated that before the change of the era, "the month did not agree with the year." To this reformation the Burmese were manifestly indebted to the Hindus, for although they call it the Prome epoch, yet occurring as it did in A. D. 79 or 80, identical with a well known Hindu epoch, from which the era of Salivana is reckoned, it cannot be supposed to have originated with the Burmese.

The era was changed the year this king died, and was therefore most probably made by his successor, his son Adetya,³¹ who reigned three years, and died A.D. 83. He

23 မုတ္တလ။

24 ဝုတ္တ။

25 သာသ။

26 သာသိ။

27 ကန္တ။

28 ကန်တက်။

29 ဘိန္ဒ။

30 သမုဒ္ဒရာ။

31 အဒိတျ။

was succeeded by Thupanya, or Nagarasingna,³² who was a conquerer, the first that appears in this history.

Nagarasingna is said to have subdued Arracan,³³ where he met with a colossal golden image of Gaudama, which he was very anxious to convey round the mountain Naga-reet,³⁴ and thence by sea to Prome, but his generals severed it in pieces and modeled from it twenty eight small ones. This story corresponds in every thing but names and dates with one related in Phayre's history of Arracan. He says: "The idol which the Burmese so much coveted they at last obtained, for though much injured it was not destroyed, but was carried to Ava A. D. 1784, where it still remains." Upon the death of Nagarasingna the glory of Prome departed and the kingdom was divided into three divisions—Kanyan, or Arracan, Pyu and Burmah, and this is the first time that Burmah is mentioned in history, and it is here introduced as the country of a people as distinct from the Pyus or Prome people, as the Pyus are from the Arracanese. Destructive wars appear to have raged at this period, though history furnishes no details. Prome was destroyed A. D. 104, but by whom is not stated, probably by a people from the south, for the next Burmese capital was established much farther north.

Three years after the destruction of Prome, Pagan again figures in the chronicles of history. This city has been generally supposed to refer to Lower Pagan, a city on the Irrawaddy, about a hundred miles below Ava. So Crawford considered it, and also Col. Burney, in some historical notices of the place. But as all agree in placing the date of its foundation in the early part of the second century, it could not well refer to lower Pagan, which bears the impress of a far more modern origin. This city was founded, or rebuilt A. D. 107, by Thamugdareet,³⁵ who reigned forty five years.

We are further informed that Phyugodi, the third king of Pagan, reigned between A. D. 161 and 241, and that

³² သုပညာနဂရသိန္ဓု။ ³³ ကင်ဝံ။ ³⁴ နဂရဝိ။

³⁵ သမုန္တရဝိ။

he obtained a great victory at a place called Kambode, over an immense Chinese army that invaded his kingdom.

The only account on record of the present state of the city, which is called in history "Upper Pagan," is from the pen of Rev. E. Kincaid, who visited the ruins while at Tagoung in 1837.

"Early this morning," he wrote, "taking two lascars, three Burmans, a musket, and an axe, or Burman sabre, I set off towards the dilapidated walls and crumbling pagodas of ancient Pagan. I tried to get information from some of the villagers relative to these ruins, particularly about inscriptions on stone slabs, and on idols; but they were, or pretended to be, entirely ignorant. I traced one of the walls of Pagan about a mile, and how much farther it extended I am unable to say. The wall is very broad, and in several places from fifteen to twenty feet high, and is entirely overgrown with jungle and forest trees. Reaching the base of what appeared to be a conical hill, I climbed up, and when nearly at the top, discovered it was a pagoda. On the top of this vast pile, I had a fine panoramic view of the country to a great distance. After digging about two cubits, the masonry appeared. The bricks are twenty inches long, made of a fine material, and nearly as hard as stone. We drew out a number of idols, of a different model from any which I had before seen."

A little to the east of Pagan are the ruins of Tagoung. "These cities," continues Mr. Kincaid, "were in ruins eight hundred years ago when Pagan was built, a hundred miles below Ava." The last remark shows that Mr. Kincaid entertained the same views of the modern origin of Lower Pagan that have been stated above. And that these remains are not the ruins of the first Pagan, is evident from the sculpture of the idols exhumed from the ruins, for when Col. Burney obtained some similar ones from Tagoung, and sent them to Calcutta, they were recognised as "very nearly of the same character as those found at Sarnath; and may have been made there or at Gaya for exportation, as is the custom to the present time."

But what is still more conclusive evidence of the age of these ruins is, the inscriptions found carved upon the

idols, in a form of the Sanscrit character, which is known not to have been in use until the fifth century of the christian era, the old square Pali character and the modern round Burmese being manifestly derived from that, or one of the third century. The existence, then, of the images entombed in the ruins of Upper Pagan and Tagoung proves that they were flourishing cities after the fifth century, while history, tradition, and their present state attest that they have been in ruins nearly a thousand years.

In A. D. 345 the historian notices a terrible hurricane that swept over the country, destroying nineteen towns and villages. But nothing further remarkable is recorded until king Poukpasau comes to the throne, A. D. 613. This king was not of royal descent, and how he ascended to royalty is not noticed; but he seems to have been a superior man, skilled in the Burmese scriptures and the vedas; and he changed the era, making the present vulgar era commence A. D. 638 or 639.

Pyeenpya was the successor of Poukpasau. He took the sceptre A. D. 847, and three months subsequently built, says the historian, "the present Pagan;" though some authorities date the founding of this city two years later, A. D. 849. Nanratha, or Anoratha, seems to be the next monarch whose name was distinguished. He was the 42d king of Pagan, and reigned, say some writers, between 1017 and 1059, but according to Crawfurd's table he came to the throne A. D. 894. This monarch was a devout Buddhist, and the historian says that in his reign Buddhism was established, implying that it had before held an uncertain tenure in the country. This king assembled a large army to invade China for the purpose of procuring a sacred relique—one of Gaudama's teeth, which it would appear had been deposited with the Chinese.

Some writers say the two sovereigns had an interview, and that the king of Pagan remained with the emperor three months. Finally negotiations were entered into which ended in the withdrawal of the army, and the king returned without the tooth, but with a celebrated image presented him by the emperor. During the king's stay in China the emperor, says Burney, "daily supplied him

with food dressed in various gold and silver vessels, which on the departure of the king, he is said to have delivered to the emperor's religious teacher, with directions to dress food in them daily, and make offerings of it to Gaudama's tooth. This proceeding induced many succeeding emperors to demand the presentation of the same kind of vessels from the kings of Pagan and Ava, as tokens of their tributary subjection to China."

Aloundsee came to the throne A. D. 1093. This king "reigned during the long period of seventy five years;" during which time "the governors of Bassein, of other districts in the Talaing country, the Kulla governor of the island of Ceylon, and he of Tenasserim, having rebelled, were put down, and their countries taken possession of, and the same with the country of Arracan." In Phayre's history of Arracan, this king is mentioned as restoring to the throne the rightful heir who had fled to his court for aid, and not as a conqueror of the country for himself. This is the earliest notice we have of Tenasserim.

The next remarkable personage that figures in Burman history is Narapadesæthu,³⁶ a famous monarch, who ascended the throne, according to Crawford's table, A. D. 1107, and Burmese inscriptions found in Arracan, and quoted above, states that a mission was sent to Ceylon A. D. 1171, and ten years subsequently, A. D. 1181, in the reign of Narapadesæthu, five men deeply versed in the Buddhist scriptures came from Ceylon to Pagan. One of the number is stated to have been a Cambojean, and another a Siamese.

According to Tavoy historians Narapadesæthu came to Tavoy, more as is represented, an apostle of religion than as a conqueror, and founded the first city that was ever built in that province in A.D. 1208. He built the pagoda on Tavoy Point, which is the oldest of which there are any records, and he was probably the first to place Buddhism on a permanent basis in that region.

³⁶ နရပတိဇေသု also နရပတိဇေသု

He is said to have ruled from the borders of China to the mouths of the Tenasserim, and died in peace, according to Peguan history, A. D. 1269.

Shortly after the death of Narapatesathu, A. D. 1281, "the emperor of China," says Burney, "deputed ten nobles with 1000 horsemen, to demand certain gold and silver vessels, on the ground that king Anorathazo* had presented them. Some historians assert that they came to demand a white elephant.

"The Chinese envoys conducted themselves in a disrespectful manner in the royal presence, when his majesty ordered the whole of the ten nobles and 1000 horsemen to be put to death. One of the ministers, Nanda-peatzeen, respectfully addressed the king, saying: 'Although the envoys of the emperor of China are ignorant of what is due to a king, and have conducted themselves in a disrespectful manner, yet if it seemeth well to your glorious majesty, a report of their conduct should be made to the emperor of China. If it pleaseth your majesty to have patience, and issue such orders as may promote the interests of the country, such orders should be issued. To put ambassadors to death has not been the custom during the whole line of our kings. It will be proper then for your majesty to forbear.' The king replied: 'They have treated with disrespect such a sovereign as I am; put them to death.' The officers of government, fearing the royal displeasure, put the whole of the mission to death, without a single exception.†

"When the emperor of China received intelligence of the execution of his envoys, he was exceedingly angry, and collecting an army of at least six millions of horse and twenty millions of foot, sent them down to attack Pagan; the king of which, Naratheehapade, as soon as he heard of the coming of this force, placed under the generals Nanda peetzeen and Yanda peetzeen 400,000 soldiers, and numerous elephants and horses, with orders to proceed

* Gold and silver flowers or ornaments are the emblems of tributary subjection among all the Indo-Chinese nations.

† There is some kind of tradition at Ava, that the Chinese envoys insisted upon appearing in the royal presence with their boots or shoes on.

and attack the Chinese army. The two generals marched to the city of Ngayounggyan, and after putting its walls, moat, and fortifications in a proper state of defence, opposed the Chinese army at the foot of Bamau river, killing during three months so many of their army, that not a grass-cutter even for its elephants and horses remained. The emperor of China, however, kept reinforcing his army, and replacing those who were killed, by sending 200,000 men, when he heard of the loss of 100,000 men, and 400,000, when he heard of 200,000. Hence the Burman army was at last overpowered with fatigue, and the Chinese crossed the river and destroyed Ngayounggyan.

"As the nats or spirits attached to either nation were fighting together in the air, four of the Pugan nats, namely, Tebathen, guardian of one of the gates of Pugan city, Tsalenwotthakenyoung nat, Kanshyeyoung nat, guardian of the long lake or tank, and Tounnggyeyen nat, lord of the foot of the mountain, were wounded by arrows. In the new Yazawen, Tebathen nat is styled Thanbethen. On the very day on which the stockade of Ngayounggyan was taken, the nat Tebathen returned to Pugan, and entered the house of the king's teacher, on whom he had always been accustomed to wait. The king's teacher was asleep at the time; but the nat awakened him, and said, 'Ngayounggyan has been destroyed this day. I am wounded by an arrow, and the nats Tsalenwotthaken, Kanshye and Tounnggyeyen are also wounded in the same manner.' The priest and king's teacher called one of his disciples, a young probationer, and sent him to the king to report the loss of Ngayounggyan. His majesty inquired how this circumstance was known, when the young probationer declared, that the nat Tebathen, guardian of the Tharabha gate, had just arrived from Ngayounggyan, and reported the matter to the king's teacher, who had thus learned that that place had been destroyed on that very day.

"The king then summoned a council of his ministers and officers, and addressed them as follows: 'The walls

of the city of Pagan are low, and enclose too small a space to permit all the soldiers, elephants and horses to remain comfortably within, and defend them. I propose therefore to build a strong wall, extending from the eastward, from the village of Balen, in the upper part of the river, straight down to the southward, taking in the village Yonatha. But it is not possible just now to procure bricks and stones quickly; if we break down some of the temples, and use the bricks, we shall be able to complete this wall most expeditiously.' Accordingly, 1000 large arched temples, 1000 smaller ones, and 4000 square temples were destroyed. During this operation, a sheet of copper, with a royal prediction inscribed on it, was found in one of the temples. The words were — 'In the city of Pagan, in the time of the father of twins, the Chinese destroying, will be destroyed.' The king thereupon made inquiries among the royal women, and learnt, that a young concubine had just given birth to twins.

"As his majesty now believed, that even if he built the intended fortification, he would be unable to defend it, he caused 1000 boats with figure-heads and war boats, to be made ready, and embarked in them all his gold and silver and treasures; a thousand cargo boats, also, he loaded with paddy and rice; in a thousand state boats he embarked all his ministers and officers, and in the gilded state boats, his concubines and female attendants. But as the boats could not accommodate all the royal concubines and female attendants, who were very numerous, the king said: 'These women and servants are too numerous to be all embarked in the boats, and if we leave them here, the Chinese will seize and take possession of them; tie their hands and feet together, therefore, and throw them into the river.' The king's teacher however observed: 'In the whole circle of animal existence the state of man is the most difficult of attainment, and to attain that state during the time of a Buddha, is also most difficult. There can be no occasion for your majesty to commit the evil deed of throwing these people into the water. Such an act will be for ever talked of even among kings, and will be regis-

tered in the records of the empire. Let your majesty therefore grant permission for any person to take such of the royal female attendants as cannot be embarked in the royal boats, and by so doing, your majesty will be said not only to have granted them their lives, but to have afforded them protection.' The king replied, 'Very true,' and set at liberty 300 of the female servants of the interior of the palace, who were taken and carried away by different inhabitants of the city.

"The king then embarked in his gilded accommodation boat, and retired to the Talaing city of Bathein (Bassien.)

"Nanda peetzeen and Yanda peetzeen, after the loss of Ngayounggyan, retreated and built a couple of stockades on the eastward slope of the male mountain, where they again resisted the Chinese. Both the generals holding some fixed quicksilver* in their mouths, leaped 15 and 16 cubits high in the air at a time, and attacked the Chinese; but whilst fighting in this manner, an arrow, which had been discharged by one of the nats of the two countries, who were contending in the air, struck Nanda peetzeen, and threw him lifeless to the ground. In consequence of this event, and the Chinese army being very numerous, victory was unattainable, and defeat again ensued. The Chinese pursued vigorously, and the Pugan generals retreated, keeping their force as much together as possible. On arriving at Pugan, and finding that the king and the whole of the population had left that city and had fled to the Talaing country, the army followed them to Bathein.

"The Chinese continued the pursuit until they reached Taroupmau, but their army, owing to the great distance which it had marched, and its great numbers, began to experience a scarcity of provisions, and was induced to turn back from that place.

"In the Burmese year 646 (A.D. 1284,) the king Naratheehapade, ~~led~~ in fear of the Chinese. Hence he is

* Among the Burmese alchemists, fixed, or as they call it dead, quicksilver, is an object of great desire, owing to the miraculous power which it is said to confer on the possessor.

styled *Taroup-pyemen*, the king who fled from Chinese."

"After remaining five months at Bassien, the king hearing that the Chinese had retreated from Pagan, made arrangements for returning thither. On his way up the river it is recorded on one occasion, his cooks having been able to serve him up a dinner of only 150 dishes, instead of the 300, to which he had always sat down every day, he covered his face with his hands and wept, saying, 'I am become a poor man.' Shortly after, on his arrival off Prome, he was poisoned by his own son, the governor of that place." The dates given by different historians are very dissimilar. Crawford's table places the destruction of Pagan A. D. 1356; while the history which Col. Burney consulted made it as above, A. D. 1284.

The year 1300 was notable for another invasion of the Chinese, and for the cruel death of Kyo-zua, the son of Naratheehapade. This prince was betrayed by his queen, and delivered into the hands of his enemies, three noblemen of Myenzain. These men compelled the young prince to enter the priesthood, and assumed the administration of government themselves. On hearing of their assumption, the emperor of China sent a strong force to restore the sceptre to their lawful sovereign. "The rebel nobles," remarks Burney, "applied for advice to a priest, who recommended them, apparently as a taunt, to consult tumblers and rope-dancers. Some of that profession were, however, sent for, and they, whilst exhibiting their feats before the three nobles, repeated as customary words of no meaning, a sentence like the following: 'There can be no dispute when no matter for dispute remains.' The nobles seized upon these words, and applying them to their own case, observed, If king Kyo-zua is killed, the royal line, which the Chinese have come to restore, will be extinct. Accordingly, they cut off the king's head and showed it to the Chinese, who then proposed to retire, if the nobles would send some presents to the emperor. The nobles agreed, but upon condition that the Chinese army should first dig a canal; and the Chinese generals, to shew the immense numbers of their army, dug in one day between sunrise and sunset, a canal 4900 cubits long, 14

broad and 14 deep, which canal near Myenzain is still in existence."^e

According to one account, Ava was founded A.D. 1364 by a prince called Thadoo; but the history Col. Burney read says that "during the reign of its first king Maugaung, A. D. 1412, the Shan chief of Theinni, whose father had been defeated and killed that year when marching with a force to attack Ava, invited the Chinese to come and aid him against the Burmese, while they were besieging the city of Theinni. The king of Ava's son, who commanded the army, hearing of the approach of the Chinese, advanced and lay in wait for them in a wood, from which, as soon as the Chinese came up, the Burmese sallied forth and attacked them, destroying nearly the whole of their army. In the following year, during the same king of Ava's reign, and whilst almost the whole of the Burmese troops were absent engaged in a war with the Talaings in Lower Pegu, another Chinese army entered the kingdom of Ava, and actually invested the capital, but the Chinese general, after besieging Ava for a month, found his army so much distressed from want of provisions, that he was induced to send in to the king a proposition, to have the dispute between the two nations decided by single combat between two horsemen, one to be selected on either side. The king agreed, and selected as his champion a Talaing prisoner named Thameinparan, the same warrior mentioned in the Talaing history. The combat took place outside of Ava in view of the Chinese army and of the inhabitants of Ava who lined its walls. The Talaing killed the Chinese, and, decapitating him, carried the head to the king. The Chinese army then raised the siege, and retreated into China.

"In the year 1442, during the reign of Bhuren-Narapadi, also called Dupayoundayaka, king of Ava, the Chinese sent another mission to demand vessels of gold and silver, which they declared Anorathazo, king of Pagan, had presented as tribute. On the king refusing, the Chinese again invaded the kingdom in the year 1443, and

^e It is called *Theng-dus-myaung*, and communicates with the Zo river, and is used for the irrigation of paddy lands.

now demanded, that Thonganbua, the Shan chief of Mogaung, should be surrendered to them. This person, together with an extensive kingdom belonging to him, had been conquered by the Burmese in 1442, and the Chinese, had previously been at war with him for several years. The king of Ava advanced with a strong force above the capital to oppose the Chinese, and drove them back to Mowun.

"The Chinese again invaded Ava in the year 1445, and the king again proceeded up the Irrawaddy to oppose them, but before the two armies met, some of the Burmese officers persuaded their king, that as the Chinese would never desist invading his dominions until Thonganbua was surrendered to them, it would be better to comply with their wishes. The king then returned to Ava with his army, and on the Chinese following and investing the city, he agreed to surrender the chief, who killed himself by poison. The king, however, sent his body to the Chinese, who are said, after embowelling it, and putting a spit through it, and roasting it dry, to have taken it with them to China.

"In the same king of Ava's reign, in the year 1449, the Chinese made an unsuccessful attempt to take possession of Mogaung and Monhyin, which were at that time considered as portions of the Burmese empire, and the king is said to have made a very handsome present in silver to the then Tsobwah of Mogaung named Thekyeinbua, and his younger brother Thopoutbua, for defeating the Chinese invading army."

Eight years subsequent to the last date, A. D. 1485 the king of Ava "gave up Tounnggoo to a member of his family. After this period Ava was ruled by a succession of foreign princes, chiefly Shañs, until A. D. 1554 when it finally came under the then reigning Tounnggoo prince," who had become king of Pegu.

The Talaings did not retain their country so long; and "In the year 1601," says Burney, "Nyaung Mendarah, king of Ava after re-building the city, and re-establishing the kingdom of Ava, which the Peguers had destroyed, proceeded with a large force against the Tsobuah of Ba-

mo, who had taken advantage of the downfall of the extensive Pegu empire left by T'shenbyumyayen, and set himself up as an independent chief. On the approach of the king, the chief fled to Yunan, and the king after taking Bamo, advanced beyond Maingtein, and sent his son, the heir apparent, close to Yunan with a message to the Chinese governor, threatening to attack him if he refused to surrender the fugitive, but the chief of Bamo was killed in an attempt to make his escape; his corpse however, with his wife and children, was sent to the king. Some Burmese historians state, that the fugitive chief took poison and killed himself, but the account given above is taken from the edition of the Royal Chronicles, revised under the orders of the present king of Ava.

In the year 1658, during the reign of Mengyeyandameit, king of Ava, Younlhi, who had set up as emperor in the southern provinces of China, having been attacked by the Tartars from the north, came down to Momyin and offered to become a subject of the king of Ava. The tsobuah made a reference to the king, who ordered him to allow Younlhi and his followers to come in, upon condition that they relinquished their arms. This was done and they were forwarded to the capital. Younlhi then came in with upwards of sixty of his nobles, including the governor of Yunan, and six hundred horsemen.

Shortly after Younlhi reached Ava, accounts were received that a large force belonging to him was attacking the Burmese territory near Momeit, and when questioned by the Burmese, Younlhi said that his generals were not aware of his having become a subject of the king of Ava, but that he would write a letter, by showing which the Chinese generals would desist. The king, however, preferred marching a force against them, which was defeated, as also a second force, and the Chinese then came down and attacked the capital. Some of the exterior fortifications were carried, and the invaders penetrated to the southward, set fire to the monasteries and houses, and desolated a large tract of country in that direction. They then returned to the assault of the city, but were repulsed with much loss; and a heavy fire being

kept up against them from the guns on the walls, which were served by a foreigner named Mi-thari Katan (Mr. Cotton ?) and a party of native Christians, a shot killed a man of rank among the Chinese, when the whole retreated.

The king then repaired the fortifications, and summoned to his assistance his two brothers the chiefs of Tounngu and Prome. The Chinese army when united again advanced from Mona, and succeeded, notwithstanding many attempts made by the Burmese to check them, in again investing Ava, which they besieged for several months. The families and property of many of the Burmese troops being outside of the city, were seized by the invaders and maltreated or destroyed; and this circumstance, joined to a great scarcity of provisions, created much sorrow and suffering among the besieged. The troops had neither rice nor money to purchase it, and on applying to the king, he observed that they had received their grants of paddy land for their services, and that he had no rice to give them; at the same time he stationed some of his women at the palace-gate with rice for sale.

The commanders of the troops at last complained against the king to his younger brother, the prince of Prome, who, in the month of May 1661, entered the palace, seized the king and his family, and assumed the sovereignty with the title of 'Mengyegyo-gaung.' The dethroned king and his family were shortly after sent to the Khyenduen river and drowned, and hence he is also styled in history *Yegyameng*, or the king thrown into the water. As soon as Mengyegyo-gaung took the reins of government the affairs of the Burmese began to prosper. He succeeded in several successive attacks on the Chinese besieging force in different directions, and at last, as the invaders suffered severely from these attacks and from an epidemic disease, they, one night in the month of November, 1661, evacuated their entrenchments before Ava and fled, leaving most of their baggage and property.

The whole of Younhi's followers were subsequently put to death, and in the month of December, 1661, the Tartars marched down a force of twenty thousand men, which

took post at Aungpenglay and sent a mission to the king of Ava, demanding Younlhi, and threatening, on refusal, to attack Ava. The king summoned a council of his officers, and gave it as his opinion, that the two precedents which they had in the surrender of Thonganbua, and the governor of Bamo, would justify his now delivering Younlhi to the Tartars. One of the Burmese officers expressed his entire concurrence in his Majesty's opinion; and Younlhi with his sons and grandson were accordingly, on the 15th of January, 1662, forwarded to the Tartar general, and the Tartar camp broke up on the 22d of January and returned to China. The mutual surrender of fugitives of every description is now an established principle in the relations between the two kingdoms, and the Chinese are said to enclose carefully in a large cage and forward to Ava, any Burmese fugitives required by the king of Burmah."

In 1740 Pegu achieved its independence, after having been subject to Burmah thirty-seven years. Disasters now attended the Burman arms wherever they spread, while the victorious army, elated with successes, marched on to the capital, and twelve years from the date of their liberation, the Peguans took the king of Ava prisoner to their capital, where he was cruelly put to death.

The triumph of the Talaings was, however, of but short duration. A new era was dawning. While the whole Burman nation, dispirited by defeat, were looking with gloom and fear down the future, there arose in an obscure northern chieftain, a star destined to illumine for ages the military annals of Burmah. This chieftain summoning to his standard a bold and trusty band, like Cromwell carried victory wherever he went. In A. D. 1753, he liberated Ava, and four years after he reduced Pegu to a Burman province. Unparalleled successes attended his career, and quelling all rebellions in the northern provinces, Masein, and Pegu, he turned his arms to the south, conquered Tavoy, and Mergui, and led his triumphant forces into the heart of Siam. But when on the eve of conquest there, he was prostrated by disease, and compelled to abandon his purpose. The disappointed

monarch made all haste to reach his own capital, but in vain ; he died in Martaban A. D. 1760, in the fifty-first year of his age.

The gallantry and statesmanship of this general has won for him the name of Alompra—" the embryo god ;" but in the annals of the Karens in these Provinces, he is remembered as the embryo demon ; for he brought death and desolation to their quiet homes ; and a dreadful famine followed after his army retired, which killed more than had fallen by the sword.

It was from this monarch that the English obtained their first veritable possessions in the Burman Empire, which were obtained by treaty A. D. 1757. Alompra then ceded to the East India Company the island of Negrais in perpetuity, together with a strip of territory opposite the old town of Bassein, for the purpose of establishing a factory. In compensation for the ground, the Company engaged to pay an annual tribute, consisting of ordnance, and military stores ; a particular clause specifying that aid should be given against the king of Tavoy. But scarcely had two years of amity passed by when the whole settlement was treacherously murdered by the Burmans. This awful catastrophe was supposed to have been brought about by the machinations of two or three evil-minded foreigners, who induced the Burmese to believe that the English were accessory to the insurrection which had just before occurred in Bassein, while Alompra was engaged in the northern states. The island has not since been occupied by the British, though they have never ceded their right of possession.

Though the first right of the English to a footing in the empire was given them by Alompra, yet it would appear from casual testimony that the British had established themselves along the coast nearly a century before that treaty was ratified. But the history of their colony is quite as obscure as the geographical notions of Ptolemy, and the dates as uncertain as the periods mentioned in Burman history.

Alompra was succeeded by his son Shembuan, who, pursuing the policy of his father, immediately invaded Siam,

and took the capital, but scarcely had the sword been sheathed when war broke out anew in the north. The Chinese having become exasperated by the real, or feigned ill usage of some of their travelling traders, made a sudden descent upon Burmah with a force of sixty thousand strong. King Shembuan hearing of the invasion, immediately dispatched an army of twenty thousand infantry, two thousand cavalry, and two hundred war elephants, under the command of the North Gate Governor. This general marched his men to the immediate relief of Kaung-toun, a city of note north of Ava, which had been invested by the Chinese troops. On reaching the besieged town, the Burmese made a spirited attack upon the aggressors, while the citizens hearing the clash of arms, made a sortie from the town, and succeeded in killing the Chinese general, and driving his army out of the country.

The Chinese did not return until January 1767. At this period the war was renewed with great vigor on both sides. The Chinese commander-in-chief, general Yintou-tayeng, marched into the field twenty five thousand horse, and two hundred and fifty thousand foot; while the Burmese commander-in-chief, the Wungee Mahatsithu, with the general Letwewengmhu, led on twenty five thousand infantry, two thousand cavalry, two hundred war elephants, and a water-force of three hundred boats filled with guns and jingalls.

The first assault of the enemy was again upon Kaung-toun, which was made with scaling ladders, axes, choppers, hooks, and ropes. But Kaung-toun received the enemy with a warm fire of cannon and musketry, with heavy timbers let fall from the walls, and with showers of boiling dammer, and molten lead. The Chinese were driven back with great slaughter, "declaring the Burmans were not men, but nats." They, however, fortified themselves around the town at about seventy yards distance.

During this ~~siege~~ siege the adroitness and valour of the Burmese were particularly conspicuous. The Burman general, after the assault, desiring a consultation with the governor of the city, laid the matter before his officers, when three bold warriors volunteered with swift boats to pass

through the enemy's forces, and arrange a plan of operations with the governor. The feat was performed, a supply of ammunition, with presents of robes and money, was thrown into the town, and after arranging with the besieged a plan of attack, the mission again broke through the enemy's ranks, and reached their own army in safety.

The Burmese generals afterwards repossessed themselves of the eight Shan towns upon the border, which had previously thrown off their allegiance to Burmah, and returned to the capital with their troops, in May 1767.

In November of the same year the country was invaded by a third army from China, consisting of six hundred thousand infantry, and sixty-one thousand cavalry, commanded by the Chinese emperor's own son-in-law, Myengkounge, and the emperor's brother Zsutaloye.

These generals having sent an army of one hundred thousand men against Bamo, pressed on and took immediate possession of Theinni, which the inhabitants, terrified at their approach, had evacuated.

General Zsutaloye then garrisoned the town, and at a short distance erected a strong fortification, and planted his army of twenty thousand cavalry, and two hundred thousand infantry. The imperial army, under the emperor's son-in-law, marched immediately into the interior, and was rapidly advancing when intelligence reached the king. All was consternation at the capital, but the former distinguished commander Mahatsithu was summoned, and dispatched with a force of thirty thousand infantry, three thousand cavalry, and thirty war elephants to impede their progress.

A battle-call now resounded over the empire, and in a few days two more armies were levied, one consisting of two hundred war elephants, two thousand horse, and twenty thousand men, with orders to march round and cut off all communication with Theinni. The other army of two hundred elephants, two thousand cavalry, and one thousand men, under the former general of the north gate, was charged to attack the rear of another force advancing by the Moneit road.

In this campaign the Burmese general Mahatsithu being met by an overwhelming force, was unable to withstand them, and was at first signally defeated. Three regiments were taken prisoners, and the remainder driven back with great slaughter, until within three days journey of the capital.

The Wungee Mahathihathura in command of the army sent round to intercept supplies, was more successful. Learning with what force the Chinese were advancing, he with a valorous officer, Zeinggamengaung, turned upon their front, and threw up, with great celerity, a breast-work of large bamboos. The Chinese rushed on with a furious attack, but failed, and at dawn the Burmese sallied out and attacked the assailants so valiantly that the enemy retired. The Burmese, inspired with fresh zeal, pursued, cutting them down until they took shelter in Theinni. General Letwemengmhu joining him at that crisis from the Moneit route, the two united their forces, and stormed the town with three divisions of ten thousand men each; and after a severe engagement, the place, with all the Chinese magazines, fell into the hands of the Burmans. The Chinese general, Myengkounge, being defeated at every point, fled with such of his troops as were able to escape; and the army beseiging Bamo hearing of these disasters, also retreated into China, and thus ended the third campaign in March 1768.

After this campaign king Shembuan sent a communication to the emperor of China saying, "All sentient beings desire rest," which seems to have delayed hostilities for the space of a year; but in 1769, another armament of fifty thousand cavalry, and five hundred thousand foot, were fitted out against his majesty's dominions. Shembuan again collected his troops, but it appears from the chronicles that this army was much inferior in number to that of the Chinese. Yet they fought bravely, and skilfully, at one time receiving the Chinese cavalry which charged upon them impetuously, at another time breaking the enemy's ranks with their war elephants, or carrying their fortifications by superior generalship. On one occasion the Burmese general, in order to make the enemy suppose he was being

strongly reinforced, caused large parties of men, elephants and horses, to pass over the Irrawady every day, and then at night brought them all secretly back again.

The object of the Chinese in all their campaigns was evidently to draw the Burmese as speedily as possible to battle, and avoid penetrating far into the country. But the Burmese commanders seem to have been superior tacticians, and to have carried on the war by continually harassing the enemy. Though there were several pitched battles, yet much time was consumed in skirmishing among the mountains, every glen and pass of which was familiar to the Burman peasantry. At length the Burmese succeeded in closing around the main army of the Chinese, and by one effective engagement carried their fortifications at Shuengaungreng, and forced the commander to capitulate. A treaty was negotiated, and the Chinese, after surrendering their arms, were escorted by the Burman troops "at a jingall's shot," to the boundaries of their own country.

The king, however, was exceedingly displeased with his officers for granting terms to the Chinese. Their orders had been to destroy them wholly, but they, with better knowledge of human nature, had dared to disobey. Their families were consequently disgraced; and though the wife of the commander-in-chief was sister to the principal queen, yet she, with the other officers' wives, was made to stand in the public streets for three days, with the Chinese generals' presents upon her head.

Such were the honors awarded to the valorous and able Burmese generals of 1769.

Defeat, however, followed hard upon these successes. While the king was engaged with China, the Siamese arose and shook off the Burman yoke. The Talaings also revolted, and established themselves at Martaban, but they were finally subdued, and soon after king Shembuan died, A. D. 1776.

Shembuan was succeeded by his son Ghengenga, a most worthless prince, who consulted only his pleasures, and finally became so unpopular that a conspiracy was organized in his own court which resulted in his fall, after which

Mornien, or Moun-Maing was placed on the throne. This unfortunate prince had, from his father's death, been immured in a monastery, and was considered a kind of "idiot youth," but he was now brought out and crowned king only to forward the designs of his enemies; and after an inglorious reign of eleven days, he was drowned in the Irrawaddy, by order of his uncle Mendaragye, the fourth son of **Alompra**, who seized the throne, and commenced his reign in 1781.

Mendaragye, soon after he put his nephew to death made war upon Arracan, and in 1787, conquered the kingdom, and annexed it to his dominions. He next perpetuated his name by founding a new capital at **Amarapura**, which was in its glory when an embassy of three hundred men arrived from China. Four years previous this monarch had attempted to hold communication with that empire, but his envoys had been seized, and sent into the northern Tartar country. He, however, courteously received the mission, and on the day of its presentation all the principal streets and walks were decorated with silken pennons of orange and scarlet, waving over beds of fragrance; while the royal avenue leading to the palace was adorned on each side with flowers, and fanciful artificial scenery. All the officers of the court appeared in the court-hall in their uniforms and jewels, with the white elephant, and others gorgeously caparisoned, drawn up with the troops in front.

Then came the procession of officers and musketeers, preceding the king's bearer mounted on an elephant with scarlet housings, bearing a superb betel-cup containing the emperor's letter. The letter-bearer was followed by a sedan chair with eight golden images of **Byamha**, and two other sedan chairs with presents; then ten war-steeds designed for presents, and then the principal ambassador upon an elephant, four others on horseback, and the escorts of the mission. The procession wound along under ever-green arches, and halted near the court-hall. The princes of the blood and the other great officers, with the heir-apparent in full state, then entered the palace, after which the royal letter was deposited before the throne, and

the chief envoys, after prostrating all the way from the court-hall to the palace, were conducted up the eastern steps to the seat appointed to foreign ambassadors. Massive folding doors were then flung open, and the emperor of the golden palace, "wearing the *Mahamuni* crown," ascended the throne, placing beside him his principal queen arrayed in the imperial jewels, followed by all the beauties of the royal harem. Immediately music streamed forth from the imperial orchestra; incense floated round the audience-hall; censers waved from the hands of attending Brahmins; while sacred flowers, and consecrated water flowed into a golden cup beaded with the nine precious gems.

The king's letter-bearer then read kneeling a list of the royal presents sent from China, and his reporter, also kneeling, read from a golden book a translation of the emperor of China's letters. Regal gifts of silver plate, with rubies, horses, scarlet, cottons, handkerchiefs, prints, and lacquered boxes, were then presented to the chief envoys, after which the silver gong was struck, the state drum beat, and his majesty, with the royal family, retired.

In 1790, the chronicles of Ava state that another deputation arrived from China, bringing the king two Chinese princesses. Burney thought they were not princesses, but women of low rank, as their feet were of natural size. If it was so, the ruse took admirably, for the king not only honored them with queenly titles, suites, and provinces, but on one occasion placed them on the throne beside himself.

In 1792, his majesty dispatched another mission to China, to convey an honorary title to the emperor, and another to the governor of Yunnan. These titles were in Pali, graven on plates of gold, set with rubies. The envoys of this mission consisted of four of the chief ministers of the empire, and it is supposed that it was at this time that the governor of Bamo brought back the splendid seal deposited at Ava, which weighed ten pounds of pure gold.

While these diplomatic missions were passing between Burmah and China, Mendaragye was making war upon Siam, which was continued for seven years, in which the

Burmese were partially victorious ; and after a prosperous reign of thirty-eight years Mendaragye died A.D. 1819, leaving his extensive possessions to his grandson, who distinguished himself by his war of two years duration with the English, and by his cession to them in 1826 of the Tenasserim Provinces and Arracan.

In 1837 his brother, the prince of Tharawaddee, usurped the throne, and after a reign of seven years died in Ava, and was succeeded by his son the present king.

The official title assumed by the king of Burmah when Col. Burney was at court, was : " Founder of the great golden city of precious stones—Ava ; lord of the king of elephants ; master of many white elephants ; possessor of mines of gold, silver, rubies, amber, and noble serpentine ; ' the illustrious and excellent, the great king of kings,' the sun-descended king, and great king of righteousness, who rules over a multitude of umbrella-wearing chiefs."*

Since the American Mission was established at Rangoon in 1812, christian churches have been founded among the Burmans at Rangoon, Ava, Akyab, Sandoway, Maulmain, Tavoy, and Mergui. The whole Bible has been printed in Burmese, together with a dictionary and grammar of the language ; numerous religious tracts, and several school books ; among which are a work on general history, a treatise on trigonometry with logarithmic and other tables, and a translation of Legendre's Plane Geometry. The Burman language, being in Farther India what the French is in Europe, has been made the organ of instruction, to more or less of all the tribes and tongues of this country from Mergui to Bamo. The gospel has been preached successfully by those who spoke no native language but Burman, to Talaings, Shans, Tounghthus, Sgaus, Pwos, Selungs, Kyens, Kemees, and Hindus.

*The preceding notices of the wars between Burmah and China have been changed from Resident Burney's Translations of the royal records.

SELUNGS.

The Selungs, or Salones, are a small tribe inhabiting the islands of the Mergui Archipelago; and were probably known, by report, to the Greek geographers as Ichthyophagi, or fish-eaters, a name to which they are fully entitled to the present time. I once met a large party beneath some casuarinas in a sandy cove fifteen miles south of Tavoy Point, but they are rarely seen so far north. Their history is soon written, for it contains only "the short and simple annals of the poor;" a history of unvaried poverty and unmitigated wretchedness.

Nothing more was heard of them for a dozen years till Capt. McLeod, in civil charge at Mergui, having made repeated visits to their islands, and feeling interested in the people, drew the Rev. Mr. Kincaid's attention to them. This gentleman made a tour in their archipelago and writing from their midst in 1838, he observed: "the scenery is uncommonly fine and picturesque. The ocean on every side, spotted with a thousand green islands and islets, all densely wooded, and of all sizes and forms, some low and very level, others with bold rocky shores, rising into mountain ridges. The climate too, must be delightfully pleasant. One cannot help exclaiming, 'this is a beautiful world,'—'man alone is vile.' Those modern infidels who dream of perfection, if they can only wipe out all system of religion, might find here a splendid field all cultivated to their hands. I am now surrounded by about three hundred souls, men, women and children, entirely free from all religion. They have no God, no temple, no priest, no liturgy, no holy day, and no prayers. In their domestic habits they are free from all conventional rules. They are very poor, too, having no houses, no gardens, no cultivated fields, nor any domestic animals, but dogs. I never saw such abject poverty, such an entire destitution of all the comforts of life."

Five or six years subsequent to Mr. Kincaid's visit, the Rev. Mr. Wade directed the attention of the public to the Selungs. Writing from Mergui, while the Commissioner, Major Broadfoot, was there, he says: "I will here record the kindness of our Commissioner to the poor Selungs, a race

of people dwelling on the islands between Mergui and Pinang, far below the Karens in knowledge and civilization, despised, abused, and robbed by Chinese, Malays, and all the surrounding tribes; whose only means of livelihood is fishing, and fabricating a species of mats. The commissioner gave them a supply of rice, did every thing in his power to inspire them with confidence, particularly with the view of inducing them to learn to read, and gave A THOUSAND RUPEES FROM HIS OWN PURSE, to aid in reducing their language to writing, and in the establishment of schools among them."

The Rev. Mr. Brayton subsequently paid considerable attention to their language, the Rev. Mr. Stevens, while on a visit to Mergui reduced it to writing; and while CAPTAIN H. M. DURAND held the commissionership of these Provinces, he also felt a deep interest in the welfare of this people, as is proved by the following interesting communication to government from his pen in 1846.

"When proceeding from Mergui to the Pakchan, I gave permission to the Rev. Mr. Brayton, of the American Baptist Mission, to embark on board the H. Co's Steamer 'Proserpine,' and on passing the Island of Lampee, he was landed in Marble Island Bay.

The object of this gentleman's visit to the island of Lampee was of a purely missionary character, with reference to the Salones; and I took advantage of his visit to request that he would have the goodness to assemble as many of the Salones as could conveniently be brought together, in order that on the return of the steamer I might have an opportunity of communicating with them.

On my return from the Pakchan to Marble Island Bay, I found forty Salone boats assembled. Each boat was said to contain on an average ten individuals, men, women, and children. The boats were excellent, and the appearance of the people neither so savage nor miserable as from their mode of life might have been anticipated. They were decently clad, and seemed not at all deficient in intelligence. The humane exertions of my predecessor to induce these people to enter upon a more civilized mode of life, and to attempt cultivation, and the formation of villages

failed ; but encouraged by the example of a Salone family from one of the islands to the southward of our territories, the Lampee Salones are now meditating the establishment of two small villages, one of six, and another five houses. The Salone who has set the example has cultivated between two and three acres. The family state that the islands to the southward of the British territories are frequented by Salones in greater numbers than those in the Mergui Archipelago, and that some of the southern Salones have taken to cultivation, and form permanent villages. The language is the same with that of the Salones of the Mergui Archipelago.

Although the exertions of my predecessor failed in one respect, his liberality and the application of Mr. Brayton have succeeded in another, and a very important particular. Mr. Brayton having acquired some knowledge of the Salone language, has taught several of them to read, and there is every probability of his Salone school being increased during the approaching rains. I forward three copies of the first Salone work, a small primer.

One of my objects in assembling the Lampee Salones was to ascertain whether they had during this dry season been visited by Malay boats, their great dread. I was happy to learn that these timid unresisting people had during the dry season been free from molestation, and carried on their Sea Slug collections undisturbed and successfully.

Formerly the Salones paid a tax to Government of 3 rupees a boat, but the tax was discontinued by my predecessor, and I have not imposed any new one upon them, nor do I intend it. Their Sea Slug collection is not unproductive, the slug selling at the rate of 30 to the rupee ; but with the exception of a few mats, the making of which is the S. W. monsoon occupation, the slug forms their only wealth ; it is caught or rather dug up, during the N. E. monsoon, at the period of low water in spring tides, and it is from the value of this article in the Mergui market that they obtain the means of purchasing rice, salt, and clothes. Their food is rice, fish, and shell-fish ; a few hogs are also caught and killed by the aid of their numerous dogs, and

some of the Lampee Salones had fowls with them. When, as frequently occurs, the Salones have expended their rice, they have resort to a wild root which grows in abundance, and which after much maceration in water, parts with its poisonous matter and becomes safe and edible.

I have no means of ascertaining, or estimating the number of Salones in the Mergui Archipelago. Any guess must be a very random one. At Lampee, a favorite Salone place of resort, I suppose that instead of forty, with timely warning, nearly one hundred boats might have been assembled, but it is their best frequented place of wandering. What the forests are to the Karens, the sea and the coasts of the islands of the Mergui Archipelago are to the Salones. The latter having boats, dispense with houses altogether, and are therefore still more migratory in their habits than the Karens. These are habits which it will require much time and favouring circumstances to break."

An examination of a small vocabulary of Selung words, collected by Mr. Brayton, proves conclusively that the language is of the Malay family, though differing considerably from the Malay proper. It is not a little singular to find a people living on the islands around these Provinces, with many of the habits, and much of the character of the South Sea Islanders, and speaking a branch of the very same language; for it is well known that the Malay, in some of its dialects, is the language of nearly all the islands on the sea-board from Madagascar round eastward to the borders of America. From Monsieur Barbe's specimens of the language of the Nicobarians, it would appear that they do not enter into this family, and as might be expected, the specimens that Symes gives of the language of the Andaman islands, shows that they are in no way related to the Selungs. Could we compare the language of the inhabitants of the Andamans with that of the negro tribes inhabiting the interior of Malacca and the islands, we might not improbably find as much resemblance between them as we do between the languages of the Selungs and Malays.

In 1846 forty-two Selungs had been baptized, and "a class of young men attended the boarding school" at

Mergui, but Mr. Brayton's visit to America the succeeding year interrupted missionary labors among them.

KARENS.

When I first came to this Coast the Karens were regarded as the aborigines of the country, but they were probably in reality the last people to enter it among the various tribes that the British found here when they took possession of the Provinces.

They regard themselves as wanderers from the north, and one of their traditions states that a party of them came across "the river of running sand" on an exploring tour before the Shans were established at Zimmay, and returned again. The crossing of this river of running sand is regarded as having been an arduous work. They understand by these waters, or river of running sand, (the words admit of either rendering,) an immense quicksand, with the sands in motion like the waters of a river. The tradition was quite unintelligible to me until the journal of Fa. Hian, the Chinese pilgrim who visited India about the fifth century, threw a sun-beam on the expression. He constantly designates the great desert north of Burmah, and between China and Thibet, as "the river of sand;" and in the Chinese map of India a branch of this desert is seen to stretch down south for several degrees of latitude, and then turn and run westward for a long distance. This desert is marked "quicksands." There can, therefore, scarcely be a rational doubt but that this is "the river of running sand," which their ancestors crossed at a remote period before Zimmay was founded. Tradition further states that when the Karen nation immigrated to this country, they found the Shans, contrary to their expectation, dwelling in the region of Zimmay. Serica and Sera, and the river Serus, are represented by Ptolemy as in the region north of Burmah; and from incidental notices in the old poetry of the Karens, it appears that there was a country north of these Provinces known to them in ancient times by the name of Sai-rai. One stanza runs thus.

"The waters of Sai-rai, of Sai-rai,
The country of Sai-rai, of Sai-rai;
It is famous for the frogs that are there,
It is famous for the fish that are there."

Malte Brun, on the authority of Marco Polo, says :
"The country of Caride is the southeast point of Thibet, and perhaps the country of the nation of the Canaines, which is spread over Ava ;" and *Teen* a word signifying heaven, but used by some of the Chinese to signify God, occurs in Karen poetry as the name of the God of a people with whom they were formerly connected. The Karen language also indicates a connection with tribes on the borders of Thibet.

Besides the Khakyeens north of Ava, there are known to be two distinct tribes of Karens. One tribe call themselves Shos, but are called by the Sgaus, Pwos, and by the Burmese Meethkhyeens, or Talaing Karens. The other tribe call themselves Sgaus, but by the Burmese are designated Meethos, or Burman Karens.

To these some add the Karenees, or red Karens, but they are more usually regarded as a Shan tribe. Their language, from Karen testimony, and from the examination of a few words, appears not to be as nearly related to either Pwo, or Sgau as the latter are to each other ; but there are manifestly many roots common to all three, as in Karen and Tounghthu. The Burmans call them Red Karens from a portion of their dress being red ; and the Karens call them *Mannepgha*, or kidnappers, from their practice of kidnapping their neighbors and selling them into slavery. None of them live within the boundaries of the British territories, or Burmah Proper ; nor have they ever been visited by missionaries, but Dr. Richardson travelled through their country in 1837. They appear to occupy a strip of land in the valley of the Salwen between Burmah and the Shan States. Dr. Richardson wrote that they were in the lowest state of civilization, and appeared few in number, perhaps as numerous as the Tounghthus.

The Pwos and Sgaus are scattered all over the Tenasserim Provinces, the southern parts of Burmah, and Arracan. Their languages, though dialects of a common language, and both easily acquired when one has been

mastered, are sufficiently distinct to make a Pwo unintelligible to a Sgau, and a Sgau to a Pwo, unless both idioms have been studied. The Sgaus are remarkable for the Scriptural traditions that exist among them. They have traditions of the creation, the temptation, the fall, and the dispersion of nations, in prose and verse, nearly as accurate as they are found in the Bible. The following is a single specimen-

Anciently, God commanded, but Satan appeared bringing destruction :
Formerly God commanded, but Satan appeared deceiving unto death.
The woman E-u and the man Tha-nai pleased not the eye of the dragon,
The persons of E-u and Tha-nai pleased not the mind of the dragon,
The dragon looked on them,—the dragon beguiled the woman and Tha-nai.

How is this said to have happened ?

The great dragon succeeded in deceiving—deceiving unto death.

How do they say it was done ?

A yellow fruit took the great dragon, and gave to the children of God ;

A white fruit took the great dragon, and gave to the daughter and son of God.

They transgressed the commands of God, and God turned his face from them.

They transgressed the commands of God, and God turned away from them.

They kept not all the words of God—were deceived, deceived unto sickness ;

They kept not all the law of God—were deceived, deceived unto death.

The languages of both tribes have been reduced to writing, and various works prepared in the two idioms. In the Sgau a dictionary and grammar have been printed ; the whole Bible has been translated ; two editions of the New Testament, one of Genesis, Exodus, and Psalms, printed ; and between thirty and forty other books. In the Pwo, a grammar, a small vocabulary, and about half the New Testament, have been printed, and less than a dozen other works. Newspapers are also printed in both dialects, and in Burmese. In the Tenasserim Provinces alone, more than fifty different villages and hamlets have been occupied for a longer or shorter period by native assistants, under the direction of the missionaries, most of whom have had charge of schools.

Owing to the erratic habits of the people, many of these stations have been abandoned for others, to which the villagers have removed, and in numerous instances two have been in this way consolidated into one ; but the last reports show that fifteen stations are occupied in the provinces of Tavoy and Mergui, and about the same number in Province Amherst. Upwards of a thousand Karens have been bap-

tized in the southern provinces, of whom a few more than a tenth have been Pwos, and the others Sgaus. According to the last report, the present number of baptized converts in the Tavoy and Mergui provinces is nine hundred and thirty-three.

About the same number have been baptized in Province Amherst, of whom one hundred and fifty may have been Pwos. The present number, according to the report for 1850, is eight hundred and forty-seven; and the whole Karen population of these Provinces does not probably exceed sixteen thousand.

In the district of Rangoon there are about twenty out stations, and more than a thousand Karens have been baptized, nearly all of whom have been Sgaus. The number last reported in good standing was eight hundred and sixty-one.

In the districts of Bassein and Sandoway, more than six thousand Karens have been baptized, of whom about three hundred have been Pwos. More than five thousand unbaptized christians, or catechumens, are also reported from the same region. There are forty-four out stations, and as many churches, of which eight are in Arracan, and thirty-six in the Bassein district. A Karen Domestic Missionary Society has been recently formed among these churches conducted wholly by Karens, who propose to support all the pastors of the churches from their own resources, with such aid as may be afforded them by voluntary subscription. In 1848 all the native preachers were supported at an average expense to the mission of only fifteen rupees per annum. That year they sustained, says the Rev. Mr. Abbott, "for a period of four months or more, nineteen schools, with an average of twenty-two scholars; and in nearly every christian village they have erected houses for worship, which are durable and commodious, in proportion to the number and ability of the converts." During that gentleman's absence in America the christians of two villages, by their own contributions, and almost entirely by their own labour, erected two chapels, either of which could not have been built by the mission for less than eight hundred rupees. "Besides this, they supported three

preachers, at an expense of about sixty rupees each, and two schools, one of seventy-five, and the other of fifty scholars. One of these churches then numbered about sixty families, and the other forty."

Thus in less than a quarter of a century from the commencement of missionary labours among the Karens, nearly ten thousand persons have been baptized, and more than fifteen thousand hopefully converted. At the present time there are between ninety and one hundred outstations, scattered over an extent of country embraced in six degrees of latitude and five of longitude, at each of which are located native teachers, and preachers able to expound the New Testament, and to teach the elements of knowledge usually taught in common schools in Europe and America.

It will be observed that in proportion to the population a very large number of Karens have embraced Christianity in these Provinces; in Tavoy, and Mergui, about one sixth, and in Province Amherst one tenth. Of the Karen population in Burmah Proper we are quite ignorant, but the Burmese there regard the converts to Christianity as constituting a proportionably large body; and if we suppose them one hundredth of the whole, which is probably too small a proportion, the whole number of Karens in Burmah will be only one million. Indeed, the population of all these wild tribes is so scattered that exaggerated estimates have no doubt been made. From the information that I have been able to gather, I cannot persuade myself that the Pwos, Sgaus, Red Karens, Tounghthus, Kemees, and Selungs would all equal in the aggregate the population of the single city of London and its suburbs—two millions. The chief interest which these wild tribes possess over their more populous neighbors lies in the fact, that they have no settled religion of their own, no heathen literature, no heathen priesthood, no heathen faith; while many of them have primitive traditions, according with the Mosaic history, that form a foundation on which the Christian can build, but which may be sought for in vain in Buddhism.

CATALOGUE.

ZOOLOGY.

In the preceding pages the animals occur in the popular order of beasts, birds, fishes, reptiles, insects, and shells ; but in the following catalogues the circular arrangement of Agassiz, as exhibited in the Principles of Zoology recently published by Agassiz and Gould, has been adopted as more in accordance with the order of nature. The arrangement of the catalogues then will be, mammals, fishes, mollusks, acalephs, polyps, echinoderms, vermes, insects, crustaceans, reptiles, and birds.

MAMMALS.

QUADRUMANA.

MONKEY TRIBE.

Hylobates Lar, Ogil. WHITE-HANDED GIBBON.
Hylobates hoolock, " (Arracan.)

ချောက်ထွဲကျော် *myouk-hlwai-kyau*.

Presbytes Phayrei, Blyth. WHITE-EYELID MONKEY.
" *Barbei*.

ချောက်တွင်းဖြူ *myouk-gwen-phyu*.

Cercopithecus cynomolgus. Ogil. FISHER-MONKEY.

Macacus carbonarius. " (Arracan.)

ချောက်တင်္ဂါ *myouk-ta-nga*.

Inuus arctoides, Blyth, LONG-HAIREDPIGTAILED
ချောက်ပတ်း *myouk-pa-te*. MONKEY.

Nycticebus tardigradus, Wat. LEMUR OR BENGAL SLOTH
ချောက်မောင်းမာ *myouk-moung-ma*.

CHEIROPTERA.

BAT TRIBE.

- Pteropus edulis*, Geoffroy. FLYING FOX.
 လင်းဆွဲ၊ လင်းဝက်၊ *len-hswai*, or *len-wet*.
Scotophilus Temminckii, Gray. CAVE BAT.
Hipposideros vulgaris, Gray. HORSESHOE, OR LEAF-
 NOSED BAT.
 “ *larvatus*, Hors. “ (Arracan.)
 လင်းနို့၊ *len-no*.

IESECTIVORA.

INSECT-EATERS.

- Tupaia javanica*, JAVANESE TUPAIA.
 တူး၊ *swai*.
Sorex Pyrotettii, Guerin. MUSK SHREW.
 ကြက်ဝတ်၊ *kywet-suk*.
Gymnura Rafflesii ?

CARNIVORA.

CARNIVOROUS ANIMALS.

- Ursus malayanus*, MALAY BEAR.
 ဝက်ဝံ၊ *wet-won*.
Arctonyx collaris, PIG-BEAR.
 ခွေးတဝက်ဝက်တဝက်၊ *khwaytawet-wet-tawet*.
Arctictis Binturong, Fischer. MONKEY-TIGER.
 မျောက်ကြား၊ *myouk-kya*.
Helictes Nipalensis, Hodg. WEASEL. (Arracan.)
 ကြောင်ဖြူ၊ *kyoung-pyan*.
Lutra leptonyx, Blyth. OTTER.
 “ *Nair*, Fred. Cuv. “ (Arracan.)
 ချံ၊ *phyan*.
Canis familiaris, DOMESTIC DOG.
 ခွေး၊ *khway*.

<i>Canis rutilus.</i>		WILD DOG.
တာဇွဲး။ <i>tau-khway.</i>		
<i>Viverra malaccensis,</i>	Gmelin.	MALACCA CIVET.
ကြောင်ကဝိုး။ <i>kyoung-ka-do.</i>		
<i>Viverra Zibetha,</i>	Linn.	ZIBETH CIVET.
ကြောင်မြင်း။ <i>kyoung-myen.</i>		
<i>Paguma trivirvata,</i>	Gray.	THREE-STRIP. PAGUMA.
ကြောင်နဂါး။ <i>kyoung-na-ga.</i>		
<i>Paradoxurus Musanga,</i>	Gray.	COMMON PARADOXURE.
ကြောင်ဝံခိုက်။ <i>kyoung-won-baik.</i>		
<i>Paradoxurus lencorhinus,</i>	Blyth.	WHITE-EARED PARADOXURE.
ကြောင်နွက်ဖြူ။ <i>kyoung-na-wet-phu.</i>		
<i>Urva cancrivora,</i>	Blyth.	TENASS. ICHNEUMON.
မြွေပါ။ <i>mway-pa.</i>		
<i>Tigris regalis,</i>	Gray.	ROYAL TIGER.
ကျား။ <i>kya.</i>		
<i>Felisleopardus,</i>	Schreber.	LEOPARD.
ကျားသစ်။ <i>kya-theet.</i>		
<i>Felis</i> (?)		LEOPARD-CAT.
ချေသစ်။ <i>khyæ-theet.</i>		
<i>Felis javanensis.</i>	Desmar.	TIGER-CAT.
တာကြောင်။ <i>tau-kyoung.</i>		
<i>Felis chaus.</i>		CHAUS.
ကြောင်စက်ခိုက်။ <i>kyoung-set-khung.</i>		
<i>Felis domestica.</i>		DOMESTIC CAT.
ကြောင်။ <i>kyoung.</i>		

RODENTIA.

GNAWING ANIMALS.

<i>Sciurus bicolor,</i>	Sparr.	TWO-COLORED SQUIRREL.
ရှင်း။ <i>shen.</i> (generic name of squirrels.)		
<i>Sciurus chrysonotus.</i>	Blyth.	GOLDEN-BACKED SQUIRREL.

<i>Sciurus atrodorsalis.</i>	Blyth	BLACK-BACKED SQUIR.
<i>Sciurus pygerthrus.</i>	"	RUSTY SQUIRREL.
<i>Sciurus Barbei.</i>	"	BARBE'S SQUIRREL.
<i>Sciurus Berdmorei.</i>	"	BERDMORE'S SQUIRREL
<i>Sciurus Kerasdrenii,</i>	Lesson.	RED SQUIRREL.
<i>Sciurus lokroides.</i>	Hodg.	ASSAMESE SQUIRREL.
<i>Sciurus lokriah,</i>	"	YEL.-BELLIED SQUIR.
<i>Pteromys petaurista.</i>		LARGE FLYING SQUIR- REL.
ရှင်ဖျံ <i>shen-pyan.</i>		
<i>Pteromys spadiceus.</i>	Blyth.	SMALL FLYING SQUIR.
<i>Mus bandicota,</i>	Bech.	BANDICOT RAT.
မြေကြွက် <i>mway-kywet.</i>		
<i>Mus rufescens,</i>	Gray.	BROWN RAT.
ကြွက်ဝပ် <i>kywet-won-phyu.</i>		
<i>Arvicola ?</i>		WATER RAT.
ရေကြွက် <i>yay-kywet.</i>		
<i>Arvicola ?</i>		FIELD MOUSE.
လယ်ကြွက် <i>lay-kywet.</i>		
<i>Rhizomys, sumatrensis,</i>	Gray.	BAMBOO RAT.
ငွေ <i>pway.</i>		
<i>Histriz leucurus.</i>		LARGE PORCUPINE.
မြ <i>phyu.</i>		
<i>Hystrix alopas ?</i>		SMALL PORCUPINE.
<i>Lepus auficaudatus.</i>	Blyth.	HARE.
ယံ <i>yung.</i>		
<i>Lepus cuniculus.</i>		RABIT.
ဖူးကောင် <i>phu-goung.</i>		

EDENTATA.

TOOTHLESS ANIMALS.

<i>Manis javanica.</i>	Desmar.	PANGOLIN.
သင်းခွေရုပ် <i>then-khwæ-ghyat.</i>		
<i>Manis leucura.</i>		ARRACAN PANGOLIN

PACHYDERMATA.

THICK-SKINNED ANIMALS.

<i>Elephas indicus.</i>		ELEPHANT.
ဆင်၊ <i>hsen.</i>		
<i>Sus indicus,</i>	Schinz.	WILD HOG.
တောဝက်၊ <i>tau-wet.</i>		
<i>Rhinoceros, unicornis,</i>	Linn.	SINGLE-HORNED RHINOCEROS.
ကြံဆင်၊ <i>kyan-hsen.</i>		
<i>Rhinoceros sumatranus,</i>		DOUBLE-HORNED RHINOCEROS.
မိုးရှင်၊ <i>kyan-shau.</i>		
<i>Rhinoceros Sondaicus,</i>	Cuvier.	JAVANESE RHINOCEROS
<i>Tapirus malayanus,</i>		MALAY TAPIR.
တရု၊ <i>ta-ra-shu.</i>		

SOLIDUNGULA.

SOLID-HOOFED ANIMALS.

<i>Equus caballas.</i>		HORSE.
မြင်း၊ <i>myen.</i>		
<i>Equus Asinus.</i>		ASS.
မြဲ၊ <i>myai.</i>		

RUMINANTIA.

RUMINATING ANIMALS.

<i>Tragulus Kanehil,</i>	Gray.	CHEVROTAIN.
ယံ၊ <i>yung.</i>		
<i>Stylloceros Muntjak,</i>	H. Smith.	BARKING DEER.
ချွေ၊ ဂျီ၊ <i>ghee.</i>		
<i>Cervus porcinus.</i>		HOG DEER.
ဒုယံ၊ <i>da-yay-chay.</i>		
<i>Rusa Equina,</i>	H. Smith.	RUSA DEER.
ဆတ်၊ <i>hsat.</i>		
<i>Panolia acuticornis,</i>	Gray.	BROWN-ANTLERED
သမင်၊ <i>tha-men.</i>		RUSA.

Nemorhedus sumatrensis, H. Smith. GOAT ANTELOPE
တာဆိတ်၊ *tau-hseik*.

Ovis aries. SHEEP.

ဆိုး၊ *tho*.

Capra Hircus. GOAT.

ဆိတ်၊ *hseik*.

Bos gaurus. H. Smith. GAUR.

ငြောင်၊ *pyoung*.

Bos sondaicus, WILD OX.

မိုင်း၊ *saing*.

Bos indicus. ZEBU OX.

နွား၊ *nwa*.

Bos taurus. ENGLISH OX.

Bubalus Arnee H. Smith. BUFFALO.

ကျွဲ၊ *kywai*.

CETACEA.

WHALE TRIBE.

Delphinus plumbeus, Dussum. PORPOISE.

လဘိုင်၊ *la-taing*.

Globicephalus ? WHALE.

“ *deductor* ?

ငါးဆင်၊ *gna-hsen*.

FISH.

ACANTHOPTERI.

PERCINÆ

PERCHES.

(Spinous rays in the dorsal fin.)

Perca, LARGE PERCH.

ငါးကကတင်း *gna-ka-kateet*.

Percinæ, SMALL PERCH.

ငါးစင်စင် *gna-senzat*.

Lates nobilis, Cuv. COCKUP.

" *heptadactylus*, Lacep. } INDIAN WHITING.

Holocentre heptadactyle, "

Coius vacti, Buch.

Perca maxima, Sonnerat.

ငါးကသပေါင်း *gna-ka-thaboung*.

Ambassus ranga, Cuv. CHANDA.

Chanda, Buch.

Hamiltonia, Swain.

ငါးဗျား *gna-bya*.

PERCOPHINÆ.

PERCIS TRIBE.

Silago acuta, Bleeker. SILAGO.

" *malabarica*, Schneid.

Sciæna "

ငါးပလွေ *gna-palway*.

CHÆTODONIDÆ.

BAND-FISH.

Chætodon. BAND-FISH.

ငါးပဲ *gna-pakhai*.

Pomacentrus ? ELEPHANT-EAR BAND-

ငါးဆင်နား *gna-hsenna*. FISH.

SCIÆNINÆ.

UMBER TRIBE.

<i>Johnius diacanthus</i> ,		INDIAN WHITING.
“ <i>cataleus</i> ,	Cuv.	“
<i>Lutjanus diacanthus</i>	Lacep.	“
<i>Corvina soluda</i> ,	“	“
“ <i>miles</i> ,	Cuv.	“
“ <i>catalea</i> ,	Balan.	“
<i>Holocentre</i> “	Lacep.	“
<i>Sciæna maculata</i> ,	Grey.	“
<i>Sciæna argentea</i> ,	Khul.	“
ငါးငြိမ်း <i>gna-byeet</i> .		
<i>Otolithus pama</i> ,	Can.	“
<i>Bolo</i> “	Buch.	“
<i>Sciæna</i> “	Cuv.	“
ငါးငြိမ်း <i>gna-byeet</i> ?		
<i>Otolithus bianritus</i> ,	Cantor.	“
<i>Johnius coitor</i> .		“
<i>Corvinus</i> “		“
ငါးပုတ်သင်ငါးငြိမ်း <i>gna-pukthen-gna-byeet</i> .		
<i>Bolo chaptis</i> ,	Buch.	“
<i>Corvinus</i> “	M'Clell.	“
<i>Johnius</i> “		BOLA.
နတ်ကတေ့၊ <i>nat-ka-dau</i> .		

MUGILIDÆ.

MULLET TRIBE.

<i>Mugil</i> ,		LARGE MULLET.
ငါးကဘလူး၊ <i>gna-kabalu</i> .		
<i>Mugil cephalotus</i> ,		LARGE-EYED MULLET.
ငါးစင်း၊ <i>gna-sen</i> .		
<i>Mugil subviridis</i> ,	Valen.	SMALL MULLET.
ငါးငုံ၊ <i>gnalung</i> .		
<i>Polynemus paradiscus</i> .		MANGO FISH.
ငါးပုံနား၊ <i>gna-pungna</i> .		

<i>Polynemus indicus</i> ,	Shaw.	KING FISH.
" <i>sele</i> ,	Buch.	"
ကကုယံ <i>ka-ku-yan</i> .		

SPIROBRANCHIDÆ.

<i>Anabas Scandens</i> ,	Cuv.	CLIMBING PERCH.
" <i>testudineus</i> ,	"	"
" <i>spinosus</i> ,	Gray.	"
<i>Perca scandens</i> .		"
<i>Anthias testudineus</i> .		"
<i>Amphiprion</i> " <i>et scunsor</i> ,	Schneid.	"
<i>Lutjan tortue</i> ,	Lacep.	"
" <i>grimpeur</i> ,	"	"
<i>Sparus testudineus</i> ,	Shaw.	"
<i>Coius cobojius</i> ,		"
ငါးငြိမ္း <i>gna-pyayma</i> .		
<i>Ophiocephalus striatus</i> ,	Bloch.	BANDED SNAKE-HEAD.
" <i>wrahl</i> ,	Lacep.	
" <i>chena</i> ,	Buch.	
ငါးရနံး <i>gna-yan</i> .		
<i>Ophiocephalus amphibius</i> ?		AMPHIBIOUS SNAKE-HEAD.
ငါးရနံးခောင်းထိုး <i>gna-yangounto</i> .		
<i>Ophiocephalus</i> ,		SPOTTED SNAKE-HEAD
ငါးရနံးပိုင်း <i>gna-yandaing</i> .		

SCOMBERIDÆ.

MACKEREL TRIBE.

<i>Thynnus affinis</i> ?		TUNNY.
<i>Cybius lincolatum</i> ,	Cuv.	INDIAN MACKEREL
ကွဲသျှမ်း <i>kwone-shat</i> .		
<i>Rhynchobdella ocellata</i> ,		OPHIDIAN.
ငါးမြွေထိုး <i>gna-mywayhto</i> .		
<i>Mastacembalus</i> ,		BANDED OPHIDIAN.
ငါးမြွေထိုး <i>gna-mywayhto</i> .		
<i>Macrognathus</i> .		LARGE-SNOUT.
ငါးရင် <i>gna-yen</i> .		

ZEINAE.

DORÆES.

- Equula ruconius*, SMALL DORÆE.
 ပင်လယ်ငါးဝင်ဝင်၊ *pinleh-gna-senzat*.

CORYPHÆNIDÆ.

- | | | |
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| <i>Stromateus niger</i> , | Bloch. | BLACK POMPURET. |
| " <i>paru</i> , | Linn. | " " |
| " <i>sinensis</i> ? | | WHITE " |
| " <i>argenteris</i> ? | | " " |

ငါးပုငါးပါလာင်း *gna-mu*, *gna-pamoung*.

- Trichinrus hanmela*, RIBBON-FISH.
 " *lepturus*, Buch.*

- Clupea* " Forskal.

ငါးတင့်၊ *gna-takhoon*.

SCORPENIDÆ.

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| <i>Platecephalus chacca</i> , | Gray. | FLATHEAD. |
| " <i>spatula</i> , | Bloch. | |
| " <i>insidiator</i> , | Cuv. | |

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| <i>Cottus</i> " | { Forskal. |
| | { Linn. |

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| " <i>spatula</i> , | Bloch. |
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| " <i>madagascariensis</i> , | Shaw. |
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| <i>Cotte madecasse</i> , | Lacep. |
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| <i>Colliomorus indicus</i> , | Lacep. |
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| " <i>chacca</i> , | Buch. |
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| <i>Collionymus</i> " | Bloch. |
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| <i>Batrachus</i> , " | " |
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GOBIDÆ.

GOBY TRIBE.

- Gobius giuris*, GOBY.
 ကသိး၊ ကသိး၊ *ka-thabo*.

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| <i>Gobius changra</i> , | Buch. | POINT-TAILED GOBY. |
| <i>Apocryptes</i> " | Cuv. | " |

* For *Gymnactes*, on page 309, read as above.

" lanceolatus,	} Bloch.	"
	} Schneid.	"
<i>Eleotris lanceolata,</i>	"	"
<i>Scartelaos calliurus,</i>	Swain.	"
ငါးငြိန် <i>gna-pyan.</i>		
<i>Amblyopus hermannianus,</i>	Lacep.	AMBLYOPUS-SUCKFR.
<i>Tænioides hermannien,</i>	"	"
<i>Cepola hermanniana,</i>	Shaw.	"
" cæcula,	} Bloch.	"
	} Schneid.	"
<i>Gobioide rubicundus,</i>	Buch.	"
<i>Tænioides,</i>	Cuv.	"
<i>Psilosomus,</i>	Swain.	"
ငါးငြိန်နီ <i>gna-byannee.</i>		
<i>Periophthalmus,</i>		PERIOPHTHALMUS.
ငါးဝင် <i>gna-zen.</i>		

MALACOPTERI.

CYPRININÆ.

CARP TRIBE.

(Soft rays in the dorsal fin).

<i>Cyprinus,</i>	Buch.	CARP.
<i>Cirrinus,</i>	M'Clell.	
ငါးအိုတုံ <i>gna-ungtung.</i>		
<i>Cirrinus calabasu,</i>	"	CALABASU CARP.
<i>Cyprinus</i>	Buch.	"
<i>Rohita</i>	Blyth.	"
ငါးနက်ငြာ <i>gna-netbya.</i>		
<i>Cyprinus nandina,</i>	Buch.	NANDINA
<i>Cirrinus</i>	M'Clell.	"
ငါးနက်ငြာ <i>gna-netbya.</i>		
<i>Cyprinus Rohita,</i>	M'Clell.	ROHITA
<i>Cirrinus</i>	"	"
ငါးထိုင်း <i>gna-thaing.</i>		
<i>Labeo,</i>	"	
<i>Cyprinus,</i>	Buch.	LABEO.
ငါးမြစ်ချင်း <i>gna-myeetkhyen.</i>		

<i>Barbus Mortonius</i> ,		MORTON BARBEL.
ငါးရတ်နီး <i>gna-yatnee</i> .		
<i>Barbus progeneius</i> ,	M'Clell.	LONG-BEARDED BAR-
<i>Cyprinus tor</i> ,	Buch.	BEL.
ငါးရက်ဝက် <i>gna-yatwet</i> .		
<i>Orcinus</i> ,		TAVOY MOUNTAIN BAR.
ငါးကတီး <i>gna-kato</i> ?		
<i>Abramis</i> ,		TENASSERIM BREAM.
ငါးပန်းပ <i>gna-phanma</i> .		
<i>Systemus</i> ,		NARROW-MOUTH CARP.
ငါးစည်ပူ <i>gna-sinpu</i> .		
<i>Systemus</i> ,		BLACK-BAND. SYSTEM.
ငါးကြင်းစောက် <i>gna-khyensouk</i> .		
<i>Systemus</i> ,		BLACK & RED TAILED
ငါးနိုးပ <i>gna-khungma</i> .		SYSTEMUS.
<i>Systemus sophore</i> , ?	M'Clell.	BLACK SPOTTED SYS-
<i>Cyprinus</i> "	Buch.	TOMUS.
ငါးနီငါးနီ <i>gna-khungma</i> .		
<i>Systemus</i> ,		ROSE-FINNED SYSTEM.
ငါးနီကြိုးခွက် <i>gna-khung-kyanrwet</i> .		
<i>Systemus</i> ,		BLACK-TAILED SYSTO.
ငါးမြိပ် <i>gna-myeemai</i> .		
<i>Systemus</i> ,		BLACK-BACKED SYSTO.
ငါးနီဘုတ်သား <i>gna-khung-bouktha</i> .		
<i>Perilampus</i> ,		PERILAMP.
ငါးပေါက်တော <i>gna-poukdau</i> .		
<i>Perilampus</i> ,		SCARLET-FINNED PER-
ငါးစဉ်း <i>gna-sin</i> .		ILAMP.
<i>Opsarius pholicephalus</i> ?		OPSARION.
ငါးစဉ်ပူ <i>gna-sinpu</i> .		
<i>Opsarius albulus</i> ,	M'Clell.	WHITE-BELLIED OPSA-
<i>Cyprinus phulo</i> ,	Buch.	RION.
ငါးရင်ပေါင်းစာ <i>gna-yen-boungsa</i> .		
<i>Opsarius bacaila</i> ,	M'Clell.	BACAILA.

- Cyprinus* " Buch.
 ငါးရင်ပေါင်းစာ။ *gna-yen-boungsa*.
Gobio, LARGE GUDGEON.
 ငါးချင်း။ *gná-khyen*.
Gobio, M'Clell. RED-EYED GUDGEON.
Cyprinus, Buch.
 ငါးချင်းမျက်စိနီ။ *gna-khyen-myetsenee*.
Chela, Buch CHELA.
Opsarius, M'Clell.
 ရင်မောင်။ *yeet-moung*.
Leuciscus, WHITE FISH.
 ငါးစည်ပူ။ *gna-sinpu*.
Leuciscus, TAVOY WHITE FISH.
 ဖလူးခါ။ *pha-lu-kha*.
Capoeta macrolepidota, Cuv.
Cobitis, LOACH.
 ပရသော။ *pa-su-than*.

SALMONINÆ.

SALMON TRIBE.

- Saurus nehereus*, Buch. BOMBAY DUCK.
Osmerus, ? " "
Salmo (Harpodon) microps, Lesneur.
Saurus ophiodon, Cuv.
Laurida microps, Swain.
Harpodon, "
Triurus microcephalus, "

CLUPINÆ.

HERRING TRIBE.

- Platygaster affinis*, ? Swain. FLAT-BELLIED HER-
Clupea affinis, Gray. RING.
 " (*Ilisha*) *affinis*, Rich.
Pellona affinis, Swain.
 " *grayana*, Cuv.
 ငါးဖြား။ *gna-bya*.

- Alosa toli*, Cuv. MALAY SHAD.
 ပုခွေးငါးစားဝယ်ငါး၊ *pa-shu-gnadawaygna*.
- Alosa ilisha*, Buch. table-fish. RANGOON
 " *palasah*, Cuv. SHAD.
Clupanodon ilisha, Buch.
 ငါးသလောက်၊ *gna-thalouk*.
- Engraulis*, SARDINE.
 ငါးပိန်းခဲစု၊ *gna-pingnaisay*.
- Sctipinna*, BRISTLE-FIN'D. SPRAT.
 ငါးပြား၊ *gna-bya*.
 ငါးထန်းရွက်၊ *gna-htanrret*.
- Thryssa purava*, Blyth. THRYSSA-ANCHOVY.
Engraulis " Buch.
Chupea " "
Thryssa megastoma, Swain.
 ငါးထန်းရွက်ငါးပြား၊ *gna-htanrret, gna-bya*.
- Coilia reynaldi*, Cuv. TAPERING HERRING.
Chætomus, M'Clell.
Trichosoma, Swain.
Notopterus kapingat, FRESH-WATER HERRING.
 ငါးပယ်၊ *gna-phay*.

ESOCINÆ.

PIKE TRIBE.

- Belone cancila*, Buch. GAR-FISH.
 ငါးပောင်ချိုး၊ *gna-phoungyo*.
- Belone condlimaculata*, Cuv. RANGOON GAR-FISH.
 ငါးပောင်ချိုး၊ *gna-phoungyo*.
- Hemiramphus*, HALF-BILLED GAR-FISH
 ပင်ထယ်ငါးပောင်ချိုး၊ *pen-lay-gna-phoungyo*.
- Exocetus nigripennis* ? FLYING FISH.
 ငါးဖြန့်၊ *gna-pyan*
- Esox*, PIKE.

PLEURONECTIIDÆ.

FLAT-FISH TRIBE.

<i>Brachirus,</i>	Swain.	BRACHIRUS.
<i>Synaptura,</i>	Cantor.	
<i>Pleuronecte,</i>	Lacep.	
<i>Solea,</i>	Cuv.	
ငါးဇွေးဣာ၊ <i>gna-khwaysha.</i>		
<i>Plagusia,</i>		TENASSERIM SOLE.
ငါးဇွေးဣာ၊ <i>gna-khwaysha.</i>		

SILURIDÆ.

CAT FISH TRIBE.

<i>Pimelodus,</i>	Swain.	ADIPOSE-FIN CAT FISH.
ငါးတန့်၊ <i>gna-tan.</i>		
<i>Pimelodus,</i>	Swain.	EIGHT BARBULED CAT-FISH.
ငါးမြင်းအုပ်ဖား၊ ငါးအုပ်ဖား၊ <i>gna-myenoukpha, gna-oukpha.</i>		
<i>Pimelodus,</i>	Swain.	LONG DORSAL-FINNED CAT-FISH.
ငါးစင်ရိုင်းကွဲ၊ <i>gna-sen-yaing-kywai.</i>		
<i>Pimelodus,</i>	Swain.	FRESH-WATER CAT-FISH
ငါးအိုက်၊ <i>gna-aik.</i>		
<i>Pimelodus,</i>	Cantor.	MAILED CAT-FISH.
ငါးရောင်၊ <i>gna-young.</i>		
<i>Pimelodus pectinidens,</i>	Cantor.	SERRATE-SPINED CAT-FISH.
ငါးရောင်၊ <i>gna-young.</i>		
<i>Pimelodus,</i>	Cantor.	SMALL-MAILED CAT-FISH.
ငါးရောင်၊ <i>gna-young</i>		
<i>Breviceps Felichthys,</i>	Swain.	SHORT-HEADED CAT-FISH.
ငါးမြင်း၊ <i>gna-myen.</i>		
<i>Felichthys,</i>	Swain.	SMALL SHORT-HEADED CAT-FISH.
ငါးမြင်း၊ <i>gna-myen.</i>		
<i>Pimelodus ?</i>	Swain.	TOPSY-TURVEY FISH.
ငါးနောက်သွာ၊ <i>gna-noukthwa.</i>		

<i>Bagrus cavadius</i> ,	Cuv.	SMALL CAT-FISH.
“ <i>aor</i> .		
<i>Arius militarius</i> ,	Cuv.	MILITARY CAT-FISH
<i>Silurus</i> “	Linn.	
<i>Ageniosus</i> “	Swain.	
<i>Arius Buchanii</i> ,		BUCHANAN'S CAT-FISH.
<i>Silonia</i> ,		SILONIA CAT-FISH.
ငါးနုသံး <i>gna-nuthan</i> .		
<i>Silurus</i> ,		LARGE SILURE.
ငါးပတ် <i>gna-pat</i> .		
<i>Silurus</i> ,		SMALL CAT-FISH.
ငါးသံမှို <i>gna-thankhyit</i> .		
<i>Silurus</i> ,		TWO-BARBULED SILURE
ငါးမြင်း <i>gna-myen</i> .		
<i>Silurus</i> ,		SMALL FRESH-WATER
ငါးကျေး <i>gna-kyay</i> .		CAT-FISH.
<i>Callichrus</i> ,		FORK-TAILED CAT-FISH.
ငါးနုသန်း <i>gna-nuthan</i> .		
<i>Silurus</i> ,		SILVERY CAT-FISH.
ငါးနုသန်း <i>gna-nuthan</i> .		
<i>Ageniosus</i> ,		LARGE BARBULELESS
ငါးမြင်းရင်း <i>gna-myenyen</i> .		CAT-FISH.
<i>Ageniosus</i> ,		SMALL BARBULELESS
		CAT-FISH.
<i>Plotosus</i> ,		PLOTOSUS CAT-FISH.
ငါးခု <i>gna-khu</i> .		
<i>Clarias punctatus</i> ,	Cuv.	SPOTTED CAT-FISH.
ငါးခု <i>gna-khu</i> .		
<i>Clarias magory</i> ,		CLARIAS CAT-FISH.
ငါးခု <i>gna-khu</i> .		
<i>Sorubium</i> ,		LONG-HEADED CAT-FISH
ငါးကျောင်း <i>gna-kyoung</i> .		
<i>Sorubium</i> ,		SMALL SORUBIUM.
ငါးဝင်ရိုး <i>gna-senyaing</i> .		

Sorubium,
ငါးရောင် *gna-young*.
Siluridae,
ငါးရွှေ *gna-yway*.

SHARK-SNOUTED CAT-
FISH.
LARGE CAT-FISH.

CARTILAGINES.

CARTILAGINOUS FISH.

Squalus,
ငါးမန်း *gna-man*.
Rhineodon.
ငါးမန်းဟိုင်း *gna-manhaing*.
Zygana.
ငါးမန်းကျွဲ *na-mangyway*.
Pristis,
ငါးတတ်ဝဲ *gna-tatwai*.
Trigoinæ,
လိတ်ကျောက် *like-kyouk*.
Torpedo ?

Linn. SHARK.
RHINEODON SHARK.
HAMMER-HEAD SHARK.
SAW-FISH.
SCATE.
TORPEDO.

PLECTOGNATAES. .

TORTOISE-FORMED FISH.

Lagocephalus,
ငါးပူတင်း *gna-puten*.
Leisomus,
ငါးပူတင်သား *gna-puten-tha*.
Lophius ?
ငါးကျောက်ခါး *gna-kyoukpha*.

FOUR-TOOTHED SEA-
PORCUPINE.
SMOOTH SEA-PORCU-
PINE.
FISHING FROG.

APODES.

EEL TRIBE.

Anguilla bicolor,
ငါးလင်ပန် *gna-lenbán*.

COMMON EEL.

<i>Anguilla arracana</i>		OTHER COMMON EEL.
“ <i>brevirostris</i> .		“
“ <i>nebulosa</i> .		“
<i>Therodontis reticulata</i> ,	M'Clell.	MURÆNA EEL.
<i>Lycodontis</i> ,	“	
<i>Strophidon</i> ,	“	
<i>Muræna</i> ,	Linn. Cuv.	
<i>Gymnothorax</i> ,	Schneid.	
<i>Murænophis</i> ,	Lacep.	
<i>Pneumobranchus striatus</i> ,	M'Clell.	SERPENT-HEARTED
<i>Unibranchapertura cuchia</i> ,	Buchan.	EEL.
ငါးရှည်။ <i>gna-sheen</i> .		
<i>Ophicardia Phayreana</i> ,	M'Clell.	PHAYRE'S SERPENT-
<i>Monopterus javanicus</i> ,	Lacep.	HEARTED EEL.
<i>Unibranchaperture lisse</i> ,	“	
<i>Monopterus laevis</i> ,	Rich.	
“ <i>cinereus</i> ,	“	
<i>Ophicardia xanthognatha</i> ,		
ငါးရှည်နီး။ <i>gna-sheen-nee</i> .		
<i>Murænesox exodentata</i> ,	M'Clell.	CONGER EEL.
“ <i>lanceolata</i> ,	“	
“ <i>serradentata</i> ,	“	
“ <i>exodon</i> ,	“	
<i>Conger tolabor</i> ,	Cuvier.	
ငါးသင်္ဘောပေါက်။ <i>gna-thembau-pouk</i> .		
<i>Conger bagio</i> ,	Buch.	CONGER BAGIO.
<i>Muræna</i> “	“	
<i>Conger longirostris</i> ,	Bennett.	
<i>Murænesox tricuspidata</i> ,	M'Clell.	
“ <i>hamiltonii</i> ,	“	
“ <i>bengalensis</i> ,	“	
<i>Congrus tricuspidatus</i> ,	Rich.	
“ <i>hamo</i> ,	Temm.	

MOLLUSKS.

CEPHALOPODA.

HEAD-FOOTED.

<i>Octopus</i> , ဓရကြက်၊ <i>yay-kyet</i> .	SMALL CUTTLE FISH.
<i>Loligo</i> , <i>Nautilus</i> , ဓရသဘီ၊ <i>kha-ruthapee</i> .	LARGE CUTTLE FISH. NAUTILUS.
<i>Spirula</i> , ခရုဒာမောင်းလိမ်၊ <i>kha-ruhna-moungling</i> .	CROOKED TRUMPET.

TRACHELIPODA.

NECK-FOOTED.

<i>Conus</i> , <i>Oliva utriculus</i> , ကျွေဝတ်၊ <i>kyway-pouk</i> .	CONE.
ဓရသပထိုး၊ <i>kha-ruthai-pahto</i> .	OLIVE.
<i>Ancillaria</i> , <i>Terebellum</i> , <i>Cypræa mauritiana</i> , ကျွေ၊ <i>kyway</i> .	ANCILLARIA. TEREBELLUM. COWRY.
<i>Ovulum volva</i> , <i>Marginella</i> , <i>Voluta</i> , ဓရသင်း၊ <i>kha-ru-then</i> .	WEAVER'S SHUTTLE. LIP-MARGINED SHELL. VOLUTE.
<i>Columbella duclosiana</i> , “ <i>rhomboidea</i> ,	Sowerby. LITTLE DOVE SHELL. Gould.
ဓရသပ်ပင်တက်၊ <i>kha-ru-theet-pentet</i> .	
<i>Terrebra</i> , <i>Eburna</i> , <i>Buccinum (Nassa.)</i> <i>Dolium galea</i> , ဘုရင်၊ <i>bu-yeet</i> .	TERREBRA. IVORY SHELL. TRUMPET “ HOGSHEAD “

*Harpa ventricosa,**Purpura,**Cassis tuberosa,**Cassidaria,**Strombus latissimus,**Pteroceras scorpius,*ခရုကနန်း *kha-ru-kanan.**Triton,**Triton variegatus,**Murex regius ?*နဂါးခေါင်း *nga-ga-goung.**Murex tribulus,**Ranella,**Pyrula ficus,*ခရုသံကြီး *kha-ru-thangyee.**Pyrula carnaria,**Pyrula,*ခရုဝတ်တောင်း *kha-ru-wettoung.**Fusus colus,**Cancellaria,**Turbinella,**Pleurotoma babylonæ,**Cerithium obtusum,*ခရုကနန်း *kha-ru-ka-dung.**Turritella terrebra,*ခရုစာရိုင်း *kha-ru-saolaing.**Littorina,**Turbo,**Monodonta,**Trochus,*သင်တွံ *then-toone.**Rotella restraria,*ခရုယာပင်ထဲ *kha-ru-ya-penlai.**Solarium perspectivum,**Haliotis asinina,**Stomatella inbricata,*

VENTRICOSE HARP

PURPLE SHELL.

TUBEROSE CASSIS.

RHINOCEROS-HEAD.

BROAD-WINGED

SPIDER. [STROMBUS.

CONCH SHELL.

VARIEGATED TRITON.

MUREX.

THORNY WOODCOCK.

FROG-SHELL.

FIG-LIKE PYRULA.

BAT-LIKE PYRULA.

SMALL PYRULA.

DISTAFF FUSUS.

FENCE-PALE SHELL.

LITTLE-WREATH "

TOWER-OF-BABEL.

CERITHIUM.

SCREWS.

PERIWINKLE.

WREATH SHELL.

ONE TOOTHED "

TURK'S-CAP.

SMALL WHEEL SHELL.

STAIRCASE TROCHUS.

SEA-EAR.

LITTLE-MOUTH SHELL.

<i>Natica maculosa</i> ,		NATICA.
“ <i>lineata</i> ,		“
“ <i>melanosterna</i> ,		“
ခရဟာပင်ထံ <i>kha-ru-ya-penlai</i>		
ခရဟာပင်ထံ <i>kah-ru-myet-lung</i> .		
<i>Nerita articulata</i> ,		PARTITION-LIPPED
<i>Neritina capillulata</i>	Gould.	NERITINA. [SHELL.
“ <i>indica</i> ,		
<i>Aplysia</i> ,		SEA-HARE.
<i>Ampullaria globosa</i> ,		APPLE SHELL.
လယ်ခရ <i>lay-kharu</i> .		
ခရဟာပင်ထံ <i>kha-ru-ya-gyee</i> .		
<i>Paludina petrosa</i> ,	Gould.	PALUDINA.
“ <i>doliaris</i> ,	“	
ခရဟာ <i>kha-ru-ya</i> .		
<i>Amnicola cincta</i> ,		AMNICOLA.
<i>Melania herculea</i> ,	Gould.	MELANIA.
“ <i>pagodula</i> ,	“	
“ <i>baccata</i> ,	“	
“ <i>humerosa</i> ,	“	
“ <i>fluctuosa</i> ,	“	
“ <i>batana</i> ,	“	
“ <i>thiarella</i> ,	Lam.	
“ <i>corrugata</i> ,		
“ <i>himalania</i> ,		
ခရဟာပင်ထံ <i>kha-ru-o-zee</i> .		
ခရဟာပင်ထံ <i>kha-ru-zeezen</i> .		
<i>Lymnea acuminata</i> ,		LYMNEA.
<i>Planorbis indicus</i> ,		PLANORBIS.
ခရဟာပင်ထံ <i>kha-ru-poke</i> .		
<i>Cyclostoma tuba</i> ,	Sowerby.	ROUND-MOUTHED
“ <i>pernobilis</i> ,	Gould.	[SNAIL.
ခရဟာပင်ထံ <i>kha-ru-kwet</i> .		
<i>Cyclostoma sectilabrum</i> ,	“	
ခရဟာပင်ထံ <i>kha-ru-saoling</i> .		
<i>Auricula judæ</i> ,		MIDAS' EAR.

<i>Scarabus plicata,</i>		SCARABUS.
<i>Succinea semiserica,</i>		SUCCINEA.
<i>Achatina octona,</i>		ACHATINA.
<i>Bulimus atricallosus,</i>	Gould.	BULIMUS.
“ <i>moniliferus,</i>	“	
ခရုခိင်ချေ <i>kha-ru-baing-khyay.</i>		
<i>Clausilia insignis,</i>		CLAUSILIA.
“ <i>philippiana,</i>		
<i>Pupa mellita,</i>	Gould.	PUPA.
<i>(Caracolla) gabata,</i>		SNAIL.
“ <i>retrorsa,</i>		“
“ <i>anceps,</i>		“
<i>Helix procumbens,</i>		“
“ <i>infrendens,</i>		“
“ <i>saturnia,</i>		“
“ <i>refuga,</i>		“
“ <i>anguina,</i>		“
<i>Nanina honesta,</i>		“
<i>(Streptaxis) petiti,</i>		“
ခရုကွက် <i>kha-kwet.</i>		

GASTEROPODA.

BELLY-FOOTED.

<i>Vitrina præstans,</i>	VITRINA.
<i>Bulla velum,</i>	BUBBLE SHELL.
ခရုသံကလေး <i>kha-ru-thangalay.</i>	
<i>Patella testudinaria,</i>	LIMPET.
<i>Siphonaria,</i>	“
<i>Calyptræa,</i>	“
သမီးနို့ <i>tha-mee-no.</i>	
<i>Chiton aculeatus,</i>	CHITON.
တင့် သင့် <i>ta-gno.</i>	

CONCHIFERA.

BIVALVES.

<i>Lingula anatina ?</i>	TONGUE SHELL:
<i>Anomia,</i>	
<i>Placuna,</i>	CHINESE WINDQW OYS-
သဘျာ <i>tha-bya.</i>	TER.

<i>Ostrea</i> ,	OYSTER.
ကမါးကနကမါး <i>ka-nu-kama</i> .	
<i>Spondylus</i> ,	SPONDYLUS.
<i>Pecten</i> ,	SCOLLOP.
ပဲတွင်ရှင် <i>pai-gwen-gyen</i> .	
<i>Meleagrina margaritifera</i>	PEARL OYSTER.
<i>Perna</i> ,	PERNA.
ကမာခရင် <i>ka-ma-kha yen</i> .	
<i>Pinna flabellum</i> ,	PINNA.
<i>Mytilus</i> ,	SALT WATER MUSCLE.
ကြောက်ပင်ဝန် <i>kyouk-pen won</i> .	
<i>Modiola varicosa</i> ,	MODIOLA.
ကတုန်သာ <i>ká-tung tha</i> .	
<i>Lithodomus</i> ,	LITHODOMUS.
ခရုကြောက်မွှောက် <i>kha-ru-kyoukhmouk</i> .	
<i>Tridacna gigas</i> ,	GIANT SHELL.
ကျားလက်ထဲ <i>kyah-let-thai</i> . ကလွန်တောင်	
<i>Unio foliacea</i> ,	FRESH-WATER-MUSCLE
“ <i>crispata</i> ,	“
“ <i>exallescens</i> ,	“
“ <i>tavoyensis</i> ,	“
<i>Anodon inoscularis</i> ,	“
“ <i>salweeniana</i> ,	“
ယောက်သွား <i>youk-thwa</i> . ပင်ဝန် <i>pen-won</i> .	
<i>Nucula turgida</i> ,	NUCULA.
ရှင် ခရုနီစာ <i>kha-ru-natsa</i> .	
<i>Petunculus</i> ,	PETUNCULUS.
<i>Arca graniosa</i> ,	ARK-SHELL.
“ <i>tortuosa</i> ,	“
ရှင် <i>gyen</i> .	“
<i>Cuculla auriculifera</i> ,	
ရှင်လိမ် <i>gyen-ling</i> .	
<i>Cardium fimbriatum</i> ,	COCKLE.
ချင် <i>gyen</i> . ရှင် <i>shat</i> .	

<i>Cytherea effossa</i> , <i>Venus</i> , ရှပ် ဝက်နာ။ ရှပ်အုတ်။ <i>shat</i> .	CLAM.
<i>Cyrena</i> , <i>Dreissina</i> , <i>Donax scortum</i> , တငတ်။ <i>ta-gnat</i> .	RIVER CONCHACA. " DONAX.
<i>Tellina shengleri</i> , <i>Tellinides timorensis</i> , ခရောင်စိ။ <i>kha-ru-mensa</i> .	PROMINENT LIGAMENT " [SHELL.
<i>Psammotæa</i> , မုက်။ <i>myet</i> .	LARGE-BLUE SHELL.
<i>Pandora</i> , ရှပ်။ <i>shat</i> .	LITTLE BASKET-SHELL
<i>Corbula</i> , <i>Solen abbreviatus</i> , " <i>diphas</i> , ခရောင်နာမောင်။ <i>kha-ru-hsen-hnamoung</i> .	CORBULA. RAZOR-SHELL. "
<i>Solenocurtus</i> , တဲး။ <i>kha-mai</i> .	
<i>Gastrochæna</i> , <i>Pholas</i> , ခရောင်ကျောက်။ <i>kha-ru-kyoukhmouk</i> .	GASTROCHÆNA. PHOLAS.
<i>Pholas</i> , ခရောင်နာမောင်။ <i>kha-ru-hsen-hnamoung</i> .	
<i>Teredo navalis</i> , " <i>gigantea</i> ? ပလတ်။ <i>pa-lake</i> .	BORER IN TUBES. "
<i>Aspergillum</i> ,	ASPERGILLUM.
ACALEPHS.	
<i>Pulmonigrade acalephæ</i> , ခု။ <i>khu</i> .	SEA NETTLES. SEA-JELLY.
<i>Physalis pelagica</i> ,	PORTUGUESE MAN-OF-WAR.

POLYPS.

CORALS.

Acinia,
Meandrina,
Porites clavaria ?
Isis hippuris ?
Eschara ?
Fungia,
Tubipora musica,
Astrea,
Corallium,
 “
 “
Dynamena,
Spongia,

SEA-ANEMONE.
 BRAIN CORAL.
 CLUB-SHAPED PORITES
 ISIS.
 ESCHARA.
 FUNGUS CORAL.
 SCARLET CHAIN-CORAL
 STAR CORAL.
 BLACK “
 TREE “ [AL.
 TENASSERIM RED COR-
 MOSS CORAL.
 SPONGE.

ECHINODERMS.

SEA-URCHINS.

Holothuria,
 ဆင်ချော့။ ပင်လယ်ပိုး။ *hsen-hmyau.*
Echinus,
 ကြောက်သဘော။ *kyouk-thembau.*
Spatangus,
Asterias,
Echinurachnius conchatus,
Scutella,

SEA SLUG.

SEA-URCHIN.

OVAL SEA-EGG.
 STAR FISH. [FISH.
 WHITE DOUBLE-STAR
 BROWN DOUBLE “

ANNELIDA.

WORMS.

Lumbricus,
 တိ။ *tee.*
Vermes,
 သန့်။ *than*
Dracunculus,
Gordius,
Hirunda.
 ကွတ်။ *chyoot.*
Hirunda,
 ချော့။ *hmyau.*
Spirobis—Serplau,

EARTH-WORM.

INTESTINAL WORM.

GUINEA WORM.
 HAIR WORM.
 LAND LEECH.

WATER LEECH.

SERPENT SHELL.

INSECTS.

COLEOPTERA.

BEETLES.

<i>Cincindelidæ,</i>	TIGER BEETLE.
<i>Carebidæ,</i>	GROUND “
<i>Brachinides,</i>	BOMBARDIER.
<i>Gyrinidæ,</i>	WHIRLING WATER-BEETLE.
<i>Dytiscus,</i>	DIVER.
<i>Histeridæ,</i>	MIMIC BEETLE.
<i>Lucanidæ,</i>	STAG “
<i>Petalyocera,</i>	EYE “
<i>Scarabæus stercorarius.</i>	SCARAB “
<i>Geotrupes</i> “	
ကျွေချိး kywai-khyaypo.	
<i>Scarabæus atlas,</i> Dejean.	ATLAS BEETLE.
“ hector,	[TLE.
	SMOOTH-HORNED ATLAS BEE-
<i>Dynastes,</i>	SHORT HORNED “ “
ကြွေချိး kyan-khyapo.	
<i>Scarabæus,</i>	HORNED SCARAB.
<i>Melonthidæ,</i>	COCKCHAFER.
<i>Cetonia,</i>	ROSE CHAFER.
<i>Centoniidæ,</i>	GREEN ROSE CHAFER.
<i>Buprestis,</i>	CHAMELEON BEETLE.
ပိးတောင်တာ po-mai-toungta.	
<i>Buprestis,</i>	CRIMSON AND GREEN BEETLE.
<i>Buprestis,</i>	SMALL GREEN “
<i>Buprestis,</i>	BLUE BUPRESTIS “
<i>Elateridæ,</i>	CLICK “
<i>Lampyridæ,</i>	GLOW WORM.
<i>Lampyridæ,</i>	FIRE-FLY.
ပိးခိးပိး po-singphu.	
<i>Cleridæ,</i>	AZURE-WINGED FLORAL BEE-
<i>Bostrichidæ?</i>	AUGER BEETLE. [TLE.

<i>Cantharidæ</i> (<i>Mykabræ</i> ?)	BLISTER FLY.
<i>Cossyphus</i> ,	SCALE-LIKE BEETLE.
<i>Curculionidæ</i> ,	LONG-SNOURED "
"	MANGO WEEVIL.
<i>Prionidæ</i>	CAPRICORN BEETLE.
<i>Longicorne</i> ,	EDIBLE GRUB.
<i>Longicornes</i> ,	SCULPTURED CAPRICORN BEE-
<i>Cerambycidæ</i> ,	MUSK BEETLE. [TLE.
<i>Cassida</i> ,	TORTOISE "
<i>Coccinella</i> ,	LADY-BIRD "

DERMAPTERA.

SKIN-WINGED INSECTS.

<i>Forficulidæ</i> .	EARWIG.
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ORTHOPTERA.

STRAIGHT-WINGED INSECTS.

<i>Blattidæ</i> .	COCKROACH.
ဒိုဟတ် : pohat.	
<i>Mantis</i> ,	SOOTHSAYER.
နံလောင် : nhambounng.	
<i>Phasmidæ</i> ,	PHANTOM INSECT.
<i>Phyllium</i> ,	WALKING-LEAF INSECT.
"	WALKING-LITCHEN "
<i>Bacteria sarmentosa</i> ,	WALKING-STICK "
<i>Achetidæ</i> ,	FIELD CRICKET.
<i>Acheta</i> ,	MOLE "
<i>Gryllidæ</i> ,	Leach. GRASSHOPPER.
<i>Locustariæ</i> ,	Latreille,
နံလောင် : hnanbounng.	
<i>Locustidæ</i> ,	Leach. LOCUST.
<i>Acrydii</i> ,	Latreille.
<i>Truxalis</i> ,	TRUXALIS.

NEUROPTERA.

NERVE-WINGED INSECTS.

<i>Termitidæ</i> ,	WHITE ANT.
ချ : chyah.	

Libellulidæ,
 ဝဇး: pazen.

DAMSEL FLY.

Myrmelconidæ,

ANT LION.

HYMENOPTERA.

GAUZE-WINGED INSECTS.

Cynipidæ,
Ichneumonidæ,
Sphegidæ,
 ဝဇး padu.

GALL INSECT.

ICHNEUMON FLY.

MASON WASP.

Sphegidæ,
Mutillidæ,
 ဝဇး: pa-rwethsiek.

MINING WASP.

STINGING ANT.

Formicidæ,
 ဝဇး: pa-rwethsiek.

ANT.

Vespidæ,
Xylocarpus,
 ဝဇး: pa-dung.

WASP AND HORNET.

CARPENTER BEE.

Apidæ,
 ဝဇး: pya.

TREE BEE.

Melipona ?

DAMMER BEE.

HYMENOPTERA.

BUTTERFLIES.

Ornithoptera priamus ?
 ဝဇး: like-bya.

PRIAM BUTTERFLY.

Pieris
 ဝဇး: like-bya.

PIERIS.

Pontia,
 ဝဇး: like-bya.

CABBAGE BUTTERFLY.

Pierides,
 ဝဇး: like-bya-phyu.

WHITE BUTTERFLY.

Nymphalidæ,
Sphingidæ,
Aggeriidæ,

BRUSH-FOOTED BUTTERFLY.

HAWK-MOTH.

HORNET-HAWK MOTH.

APHANIPTERA:

NON-VISIBLE WINGED INSECTS.

Pulicidæ, FLEA.
 ခွေးလေး *khway-lay*.

DIPTERA.

TWO-WINGED INSECTS.

Pulicidæ, GNAT.
 ချိုတ် *phyuk*.
Culicidæ, MOSQUITO.
 ခြင်္သေ့ *khyaen*.
 မိုးလောက်လန် *po-louk-lan*. }
 မိုးတောက်ထိုး *po-souk-hto*. } LARVA OF MOSQUITO.
Tipulides, FATHER-LONG-LEGS OR CRANE-
Tipulidæ, GAD-FLY. [FLY.
 မှက် *hmet*.
Tipulidæ (*Chironomides*), MIDGE.
Muscidæ, HOUSE FLY.
 ယင်ကောင် *yen-goung*.
Caliphora,—*Sarcophaga*, FLESH “
Cecidomyiides (*Cecidomyia* ?) PADDY “

ARACHNIDA.

SPIDERS AND SCORPIONS.

Aranea, DOMESTIC SPIDER.
 ပန်ကျီ *pen-ku*.
Vagabonda, LEAPING “
Salticus ?
Lycosa, RUNNING “
Orbiteles (*Epeira* ?) GEOMETRIC “
Aelenga ? GRASS SPIDER.
Dolomedes, WATER SPIDER.
Mygale, MYGALE BEAR-SPIDER.
 တောပင်းကွံ *tau-pengu*.

Scorpio. BLACK SCORPION.
ကင်းမြီးကောက်၊ *ken-myeekouk.*

Scorpio. BROWN SCORPION.
ကင်းမြီးကောက်၊ *ken-myeekouk.*

Acaridæ. TICK.

ခွား၊ *hmwa.*

Acaridæ. LARGE TICK.

MYRIAPODA.

CENTIPEDS, AND MILLEPEDS.

Scolopendra. CENTIPED.
ကင်း၊ *ken.*

Scolopendraphosphorea. LUMINOUS CENTIPED.
ကင်းရဲ၊ *ken-zung.*

Julus. MILLEPED.
ကင်း၊ *ken.*

CRUSTACEANS.

CRAB TRIBE.

Ocypoda ceratophthalma. SAND CRAB.
ကနဲနဲ၊ *ganan.*

Platyonychus? PADDLING CRAB.
ကနဲနဲ၊ *ganan.*

Galasimus. BECKONER.
ကနဲနဲ၊ *ganan.*

Gecarcinian. RED FRESH-WATER CRAB.
လယ်ပွန်၊ *lay-pazune.*

Gecarcinian? DIMINUTIVE “
ကြောက်ကနဲနဲ၊ *kyouk-ganan.*

Astacus, LARGE RIVER CRAY FISH.
ပွန်တောက်၊ *pa-zunetouk.*

Astacus, SMALL RIVER “
ပွန်း၊ *pazune.*

Astacus,
 ဟွန်မိတ်၊ *pa-zunesiek*.

BROAD ROSTRUM "

Gammarus,
 ဟွန်ခေခွဲ၊ *pa-zune-yayhsuai*.

FRESH-WATER SHRIMP.

Squilla,
Pagurus,
 ဟန်ဂွတ်၊ *panzute*.

SEA MANTIS.

HERMIT CRAB.

Oniscus,
Limulus,
Balanus—Ibla.

SOW BUG.

KING-CRAB.

BARNACLE.

ခေခွဲ၊ *khayen*.

REPTILES.

CHELONIA.

TORTOISE TRIBE.

<i>Testudo radiata</i> , လိတ်ခေါင်နီ။ <i>like-ghoungnee.</i>		SMALL LAND TORTOISE.
<i>Testudo</i> . လိတ်ငှင်ချောက်။ <i>like-khyenkhyouk.</i>	LARGE	"
<i>Testudo geometrica</i> , တောလိတ်။ <i>taulike</i> , တောင်လိတ်။ <i>toung-like.</i>	ABRACAN	"
<i>Emys</i> , လိတ်တိုက်။ <i>liketaik.</i>		MARSH TORTOISE.
<i>Cistudo amboinensis</i> , လိတ်စောက်။ <i>likesouk.</i>	Daudin.	BOX TERRAPIN.
<i>Emys dhongoka</i> , လိတ်ပုတ်။ <i>likepoke.</i>		ARCN. MARSH TORTOISE.
<i>Gymnopus</i> , လိတ်ကျေး။ <i>like-kyay.</i>		SOFT TORTOISE.
<i>Chelonia virgata</i> , လိတ်ပြင်ဝန်။ <i>like-pyenwon</i> , လိတ်ကျေး။ <i>likekyay.</i>	Cuvier.	GREEN TURTLE.
<i>Chelonia imbricata</i> ,	Linn.	TORTOISE-SHELL TURTLE.

SAURIA.

SAURIANS.

<i>Crocodiinus vulgaris</i> , မိကျောင်း။ <i>meegyoung.</i>	Cuvier.	COMMON CROCODILE.
<i>Crocodilus porosus</i> , မိကျောင်း။ <i>meegyoung.</i>	Schneid.	SEYCHELLE "

<i>Platydictylus gecko</i> , Linn.	FLAT-TOED GECKO.
တောက်တုံး၊ <i>touktai</i> .	
<i>Hemidactylus coctæi</i> ,	COMMON "
အိမ်မြောင်၊ <i>ainghmyoung</i> .	
<i>Hemidactylus frenatus</i> ,	SMALL-THUMBED "
အိမ်မြောင်၊ <i>ainghmyoung</i> .	
<i>Ptychozoon homalocephalum</i> ,	WEBB-FOOTED "
<i>Hydrosaurus</i> ? Swain.	MONITOR CROCODILE.
Monitor ? Cuvier.	
မွတ်မိကြောင်၊ <i>phwote-meegyoung</i> .	
Monitor, Cuvier.	MONITOR.
မွတ်ကျား၊ <i>phwotekya</i> ,	
မွတ်ကြဲ၊ <i>phwotekhyai</i> .	
<i>Varanus bengalensis</i> ,	BENGAL VARAN.
မွတ်၊ <i>phwote</i> .	
<i>Varanus</i> ,	TERRESTRIAL VARAN.
မွတ်၊ <i>phwote</i> .	
<i>Varanus</i> ,	BLACK "
မွတ်မီး၊ <i>phwotemai</i> .	
<i>Varanus</i> ,	MAULMAIN "
မွတ်ညှင်း၊ <i>phwotehnyen</i> .	
<i>Varanus bicintatus</i> ,	LARGE ARRACAN "
မွတ်ကျား၊ <i>phwotekya</i> .	
<i>Calotes versicolor</i> ,	BLOOD-SUCKER.
ပုတ်သင်၊ <i>pokethen</i> .	
<i>Ctoales mystaceus</i> ,	LARGE "
<i>Dilophyrus grandis</i> ,	DILOPHYRUS.
<i>Dracunculus maulatus</i> ,	FLYING LIZARD.
<i>Draco</i> "	
ပုတ်သင်ပျံ၊ <i>pokethen-byan</i> .	
<i>Draco lineatus</i> ,	ARRACAN FLYING LIZARD
<i>Lacerta</i> ,	SAND-LIZARD.
ပုတ်၊ <i>padat</i> .	

Euprepis rufescens, Shaw. SCINE.

သင်းချော၊ *thenkhyau*.

ပုတ်သင်ချော၊ *poke-thenkhyau*.

သင်လိက်၊ *thenlike*.

OPHIDIA.

INNOCUOUS SERPENTS.

Typhlops braminus, Daudin. BLIND WORM.

မြေဆင်ပုက်၊ *myway-hsen-pyet*.

Python reticulatus, Schneid. PYTHON.

ပေါကြီး၊ *saba-gyee*.

Acrochordus javanicus, INNOCUOUS ESTUARY SER-
ထုလားကောက်၊ *ku-la-kouk*. [PENT.

ကနီကပ်၊ *ka-na-koke*.

Xenodon purpurascens, XENODON.

Lycodon aulicus, Linn. LYCODON.

ခိန်ကျွက်မြေ၊ *eing-kywet-myway*.

ကြက်ပွဲဒီးမြေ၊ *kyetukho-myway*.

Coluber radiatus, Schlegel. STRIPED RAT SNAKE.

“ *quadrfaciatus*, Cantor.

တောကြီးလင်း၊ *tau-gyeelin*.

လင်းမြေ၊ *len-myway*.

Coluber korros, Shaw. BROWN-GREEN RAT SNAKE

လင်းမြေ၊ *len-myway*.

ငန်းစောင်း၊ *gnan-soung*.

Dipsas cynodon, VARIEGATED TREE “

ရက်ကန်းကြီးမြေ၊ *yetkan-gyo-myway*.

Dipsas multimaculatus, SPOTTED “ “

Dryinus nasutus, RIBBON “

မြေပိန်းမြေ၊ *myway-seing-myeeshae*.

မြေပိန်း၊ *mywayseing*.

<i>Leptophis prasinus</i> ,	LEPTOPHIS.
“ <i>pictus</i> ,	“
“ <i>ornatus</i> ,	“
<i>Tropidonotus stolatus</i> , Linne.	BUFF-STRIPED TROPIDO-
မြစ်ရွှေငြိး <i>myetshau-myway</i> .	[NOTUS.
<i>Tropidonotus schistosus</i> , Daudin.	BLACK-STRIPED TROPIDO-
မြစ်ရွှေငြိး ခေငြိး <i>myetshau-myway</i> .	[NOTUS.
<i>Homalopsis rhinchops</i>	WATER SNAKE.
ခေငြိး <i>yay-myway</i> .	
<i>Iomalopsis enhydrys</i> , Schneid.	IRIDESCENT “ “
ခေငြိး <i>yay-myway</i> .	

VENOMOUS SERPENTS.

<i>Elaps melanurus</i> ,	Shaw.	ELAPS.
<i>Elaps</i> ?		FIRE SERPENT.
မွေသားများအပင်ြဲ <i>myway-tha-myaapha</i> .		
<i>Bungarus faciatus</i> , Schneid.	YELLOW-BANDED BUNGA-	
ငန်းတော်ကျား <i>gnan-dau-kyā</i> .		[RUS.
ငန်ကွက် <i>gnan-gwet</i> .		
<i>Bungarus candidus</i> , Linn.	WHITE-BANDED BUNGA-	
ငန်ဝါ <i>gnan-wa</i> .		[RUS.
<i>Hamadryas</i> ?		DUSKY HAMADRYAD.
ငန်းဝတ် <i>gnan-boke</i> .		
<i>Hamadryas ophiophagus</i> Can.	BELTED “	
ငန်းသံကွင်း <i>gnan-than-gwen</i> .		
ငန်းသံကွင်းစွတ် <i>gnan-than-gwenswote</i> .		
<i>Naja lutescens</i> , Lauren.	TENASSERIM COBRA.	
မြေဟောက် <i>myway-houk</i> .		
<i>Vipera</i> ?		VIPER.
မြေပွေး <i>myway-pway</i> .		
<i>Trionocephalus gram</i> . Shaw.	GREEN VIPER.	
မြေမိန်း <i>myway-seing</i> .		
<i>Hydrus vel Hydrophis</i> ,	HYDRUS.	
ကျပ်လုံး <i>kyat-lung</i> .		

Laticauda cutata,
ကုန်ဘူး၊ *kyat-bya*.

FLAT HYDRUS.

Hydrus gracilus,

Shaw.

SLENDER SEA SNAKE.

BATRACHIA.

FROG TRIBE.

Cælia?

NAKED SERPENT.

သစ်ချောက်ထောင့်၊ *thamee-khyoukhtoung*.

Rana tigrina,

Daudin.

TIGER FROG.

ဝါး၊ *pha*.

Polypedatus,

TREE FROG.

ဝါး၊ *pha*.

Hyla bengalensis,

BENGAL TREE FROG.

Polypedatus?

ဝါး၊ *pha*.

Rufo melanostictus,

Schneid. TOAD.

ဝါးဖြတ်၊ *phayyoke*.

BIRDS.

RAPTORES.

RAPACIOUS BIRDS.

<i>Tinnunculus, alaudarius,</i>	Gould.	KESTREL.
<i>Falco alaudarius,</i>	Brisson.	"
<i>F. tinnunculus,</i>	L.	"
<i>F. fasciatus,</i>	Retzius.	"
<i>F. brunneus,</i>	Bech.	"
<i>F. rufescens,</i>	Swain.	"
<i>F. interstinctus,</i>	M'Clell.	"
<i>Cerchneis murum,</i>	Brehm.	"
<i>C. media,</i>	"	"
<i>C. tinnuncula,</i>	"	"

ကျီးသီး: gyotheing.

<i>Hierax eutolmos,</i>	Hodg.	BENGAL FALCON.
" <i>bengalensis,</i>	Blyth.	

သောင်းငွေ့နက်: doungeo-hnouk.

<i>Hierax fringillarius,</i>		SMALL FALCON.
<i>Hæmatornis cheela,</i>	Gould.	SPOTTED HAWK.
<i>Falco cheela,</i>	Latham.	
<i>H. undulatus,</i>	Vigors.	
<i>Circæus nipalensis,</i>	Hodgson.	
<i>H. et Buteo bacha,</i>	Franklin.	
<i>F. albidus,</i>	Sykes.	
<i>Buteo melanotis,</i>	Jerdon (the young.)	
<i>F. bacha,</i>	Daudin (African race.)	
<i>F. bido,</i>	Horsfield (Malayan race.)	

သောင်းစွန်: doungewon.

<i>Circus melanoleucos,</i>		HARRIER.
<i>Falco melanoleucos,</i>	Pennant.	

သီးကြီး: theingkya.

<i>Micronisus badius,</i>	Temm.	CALCUTTA SPARROW-
<i>Falco badius,</i>	Gmelin.	[HAWK.]

F. Brownii, Shaw.
F. Dussumieri, Tem. (nec apud Syke's or Jerdon's Catalogues.)

Accipiter dukhunensis, Sykes.
Nisus malayensis, Meyer.
Chippuck Falcon, Latham.

၁၁၆၈၁ theing-kyetma.

Nisaster badius,*

HAWK.

၁၁၁ thaing.

Astur trivirgatus,

CRESTED GOSHAWK.

Falco trivirgatus,

Reinwardt.

Astur indicus,

Hodgson.

A. palumbarius apud Jerdon, Catal.

A. cristatus,

G. R. Gray.

Spizaetus rufitinctus,

M'Clell. P. Z. S. 1839.

Spizaetus, cirratus?

Horsf. CRESTLESS GOSHAWK.

Falco cirratus (?),

Gmelin.

F. cirstatellus,

Temminck.

F. Lathamii,

Tickell.

Nisaetus pallidus,

Hodgson, (young.)

Falco limnaetus,

Horsfield.

F. caligatus,

Raffles.

F. niveus,

Temminck.

Limnaetus Horsfield,

Vigers.

Nisaetus nipalensis,

Hodg. J. V. CRESTLESS VAR.

S. V. 229.

Lake falcon, Bauj eagle, and *

probably Jerwied eagle, Latham.

Aquila Mogilnik,

BROWN-BACKED EAGLE

Falco mogilnik,

Gmelin.

F. ferox, and brown-backed eagle, Latham.

F. imperialis,

Temminck.

Aquila heliaca,

Savigny.

Aq. bifasciata,

Gray.

Aq. nipalensis,

Hodg. As. Res. xviii, pt. II, 13, [pl. I.

Aq. chrysaetos,

apud Meyer, et Jerdon, CATAL.

၁၁၁ won-lo.

* Does this differ from the preceding species?

Buteo pygmaeus,
Astur barbatulus,
Pandion haliaetus,
Falco haliaetus,
F. carolinensis,
F. cayanensis,
F. arundinaceus,
F. piscator,
Aquila Piscatrix,
Aq. balbuzardus,
P. fluvialis,
P. americanus,
P. alticeps et *P. plani*.
P. indicus,
P. ichthyaeus,
Bengal Osprey,
 ဝလက် won-let.

Haliaetus Macei,
Falco Macii,
H. albicilla
H. ossifragus (?)
H. fulvigaster,
H. albipes,
H. unicolor,
 ဝလက် won-let.

အင်တကြီး enta-gyee.

Haliastur indus,
Falco indus,
F. ponticerianus,
Haliaetus girrenara,
H. garruda,
Milvus rotundicaudatus,
 ဂွန်ခေါင်လွှာ swon-ghoung-phu.

Milvus goosinda.
M. cheele,
M. melanotis,
Haliaetus lineatus (?),
 ဂွန်ပုဒ် swon-boke.

BUZZARD.

Eyton.

OSPREY.

L.
 Gmelin.

Brissou.
 Vieillot.
 Dumeril.
 Savigny.
 Vieillot.
 Brehm.
 Hodgson.
 Kaup, apud G. R. Gray.
 Latham.

FISHER-HAWK.

Temmick.
 apud Vigors and Horsfield ?
 apud Raffles.
 Vieillot.
 Hodgson.
 Gray, the young. (Hardw. *Ill. Ind. Zool.*)

SHIVA'S KITE.

Boddaert.
 Gmelin.
 Vieillot.
 Lesson.
 Hodgson, young.

Sykes. KITE.

Jerdon.

Temminck.

Gray, Hard. *Ill. Ind. Zool.*

Otoggys alous,
Vultur calvus,
V. ponticerianus,

ဝဇ္ဇိတံ *len-ta*.

Gyps bengalensis,
Vultur bengalensis,
V. indicus,
V. chagoun,
V. leuconotus,

ဝဇ္ဇိတံ *len-ta*.

Scops aldrovandi,
Strix scops,
S. zorca et giu,
S. pulchella,
S. carniolica,
S. ephialtes,
S. bakhamæna (?)

Scops europæus,
Sc. senegalensis,
Sc. capensis,

Sc. sunia,
Sc. pennata,
Sc. malayanus,

Sc. rutilus,
Ephialtes spilocephalus (?)

Otus (Scops) japonicus,

O. (Sc.) africanus,

Scops lempiji

Strix lempiji,

S. noctula,

Scops javanicus,

Sc. lettia,

Sc. lettioides et griseus,

ဇိက္ကဝ် *zeekwet*.

Ketupa ceylonensis,

Strix "

S. Leschenaultii,

S. Hardwickii,

Tem. RED-HEADED VULTURE
 Scopoli, "
 Daudin, "

Hardw. CHINESE VULTURE.
 Gmelin,
 Tem.
 Daudin,
 Gray,

Ray, SMALL HORNED OWL.
 L.

Scopoli,
 Pallas,
 Gmelin,
 Savigny,
 Pennant,
 Lesson,
 Swainson,
 Smith,
 Hodg,

"
 A. Hay,
 Pucheran,

Blyth,

Tem.

"
 (Pl. Col. 99.)

Horsfield,
 Reinwardt,
 Lesson,
 Hodgson,

Hard. LARGE HORNED OWL.
 Latham, NAKED-LEGGED OWL.
 Tem.
 Gray,

S. dumeticola,
Cultrunguis nigripes,
 ဝိတုဝ် *teedoke*.

Tickell.
 Hodgson.

Ketupa javanensis,
Strix ketupu,
S. ceylonensis,
Athene cuculoides.
Noctua cuculoides,
N. auribarbis,
 ဝိတုဝ် *zee-kwet*.

Lesson, (Arracan.)
 Horsfield,
 apud Tem.
 Gould. **ATHENE OWL.**
 Vig.
 Hodgson.

Ninox scutellatus,
Strix scutellata,
S. hirsuta,
S. lugubris,
Ninox nipalensis,
Athene malayensis,
 ဝဲဒုဝ် *khen-boke*.

Hodg. **DEATH OWL.**
 Raffles,
 Tem.
 Tickell,
 Hodgson,
 Eyton.

Syrnium indrani,
Strix indrance,
Ulula?

Gray. **SYRNIUM OWL.**
 Sykes.
 Hodgson.

Bulaca newarensis,
 " *monticola*,
Sornium seloputo,
Strix seloputo,
S. pagodarum,
Strix javanica,
Str. flammea,
 ဝဲဒုဝ် *hgnet-hso*.

Jerdon,
 Tem. **SELOPUTO OWL.**
 Horsfield,
 Tem.
 De Wor. **BARN OWL.**
 of India and the Malay countries.

Phodilus badius,
Strix badia,
 ဝဲဒုဝ် *khen-boke*.

Hors. **PHODILUS OWL.**
 "

DENTIROSTRES.

TOOTH-BILLED BIRDS.

Lanius hypoleucos,
 " *phanicurus*,
 " *tigrinus*,
 " *collurioides*,

Blyth, **WHITE-BELLIED SHRIKE.**
 Pallas, **RED-HEADED** "
 " **TIGER** "
 " **PEGU** "

<i>Lanius nigriceps</i> ,	INDIAN SHRIKE.
“ <i>tephronotus</i> ,	Vigors, GREY-BACKED “
“ <i>caniceps</i> ,	Blyth, RED-BACKED “
<i>Tephrodornis pelvica</i> ,	DRONGO “
<i>Edolius paradiseus</i> ,	PARADISE EDOLIUS.
ငှက်တော်၊ <i>hgnet-dau</i> .	
<i>Edolius</i> ,	MALABAR “
“ <i>grandis</i> ,	Blyth,
ငှက်တော်၊ <i>hgnet-dau</i> .	
<i>Bhringa remifer</i> ,	Tem. ARRACAN “
ငှက်တော်၊ <i>hgnet-dau</i> .	
<i>Edolius grandis</i> ,	Gould, LARGE-CRESTED EDOLIUS
<i>Dicrurus macrocerus</i> ,	Vieil. KING CROW.
ငှက်တော်၊ <i>hgnet-dau</i> .	
<i>Dicrurus intermedius</i> ,	Blyth, SMALL KING CROW.
<i>Edolius barbatus</i> ,	Gray, ARRACAN KING CROW.
<i>Pericrocotus roseus</i> ,	ROSY BIRD.
ငှက်မင်းသား၊ <i>hgnet-mentha</i> .	
ငှက်မင်းဆွီး၊ <i>hgnet-menthamee</i> .	
<i>Pycnonotus jocosus</i> ,	PINK-EARED BULBOUL.
ပုတ်ဖင်းနီ၊ <i>poke-phennee</i> .	
ပုတ်ဆီကု၊ <i>poke-hsee-ku</i> .	
ဘွတ်၊ <i>bwote</i> .	
<i>Pycnonotus atricapillus</i> ?	BLACK “ “
“ <i>Finlaysoni</i> ,	YELLOW AND GREEN “
ပုတ်ဝါ၊ <i>poke-wa</i> .	
ဘွတ်ဝါ၊ <i>bwote-wa</i> .	
<i>Pycnonotus flavescens</i> ,	YELLOW “
ပုတ်ဝါ၊ <i>poke-wa</i> .	
ဘွတ်ဝါ၊ <i>bwote-wa</i> .	
<i>Pycnonotus nigropileus</i> ,	Blyth, BROWN-BREASTED “
<i>Pycnonotus hamorrhous</i> ,	AMHERST “
<i>Pycnonotus melanocephalus</i> ,	BLACK-CRESTED “
ဘွတ်ဝါမောက်တင်၊ <i>bwote-wa-moukten</i> .	

<i>Phyllornis cochinchinensis</i> ,	GREEN	"
ငှက်မိန်း <i>hgnnet-saing</i> .		
<i>Phyllornis Hardwickii</i> ,	"	"
<i>Chloropsis curvirostris</i> ,	"	"
ဒိုင်းတန်သယ် <i>pain-tanthai</i> .		
<i>Trudoides atriceps</i> ,	Tem. BLACK-HEADED	"
ပုဝ်ဝါ <i>poke-wa</i> .		
ပွတ်ဝါ <i>bwote-wa</i> .		
<i>Tricophorus crispiceps</i> ,	Blyth, OCHRE-HEADED	"
<i>Criniger flavedus</i> ,	YELLOW-BELLIED	"
<i>Hypsipetes psaroides</i> ,	CROWN-FEATHER-POINT- ED BULBOUL.	
<i>Hypsipetes</i> ,	Blyth, BLACK	"
<i>Hemixas flavala</i> ,	" ASHY	"
<i>Heteromorpha ruficeps</i> ,	RED-HEADED	"
<i>Pitta Malaccensis</i> ,	BLUE ANT-THRUSH.	
<i>Brachyurus cyanop'erus</i> ,	Tem.	"
<i>Pitta cyanea</i> ,	"	"
<i>Paludicola nipalensis</i> ,	Hodg.	
မြေခန်း <i>myay-khung</i> .		
မြေငုံ <i>myay-gnung</i> .		
<i>Cisca venatorius</i> ,	GREEN AND RED ANT	
<i>Turdus rufulus</i> ,	Drap. THRUSH. [THRUSH.	
" <i>Macei</i>	Vieil. OLIVE THRUSH.	
<i>Zoothera marginata</i> ,	ZOOTHERA THRUSH.	
<i>Merula leucogaster</i> ,	BLACK	"
<i>Petrocincla affinis</i> ,	ROCK	"
<i>Garrulax Belangeri</i> ,	BABBLER.	
" <i>leucolophos</i> ,		
" <i>moniliger</i> .		
ဝေရင်းငှက် <i>wa-young-hgnnet</i> .		
<i>Garrulax pectoralis</i> ,	BANDLESS BABBLER.	
<i>Malacocincla Abbotti</i> ,	ABBOTT'S	"
<i>Iora typhia</i> ,	IORA	"
<i>Pomatorhinus olivaceous</i> ,	FAN-TAILED	"
သွေးရှည် <i>thwaysheen</i> .		
<i>Pomatorhinus Phayrei</i> ,	PHAYRE'S POMATORHINUS.	

<i>Timalia gularis</i> ,	TIMALIA BABBLER.
<i>Oriolus melanocephalus</i> ,	MANGO BIRD.
ငှက်ဝါး <i>hgnet-wa</i> .	.
<i>Oriolus indicus</i> ,	INDIAN ORIOLE.
<i>Irena puella</i> ,	FAIRY BIRD.
ငှက်ဖျားဝင်း <i>hgnet-pya-zat</i> .	
<i>Saxicola caprata</i> ,	STONECHAT.
လယ်ခြား <i>lay-khya</i> .	
<i>Zosterops palpebrosus</i> ,	WHITE-EYED WARBLER.
<i>Orthotomus longicaudata</i> ,	TAILOR BIRD.
နံပြည့်ဝတ် <i>hnan-pyee-soke</i> .	
<i>Phylloscopus fuscatus</i> ,	Blyth, WARBLER.
" <i>magnirostris</i> ,	"
" <i>javanicus</i> ,	Horsf.
" <i>viridanus</i> ,	"
" <i>brunneus</i> ,	"
" <i>schisticeps</i> ,	Hodg.
" <i>modestus</i> ,	Gould,
<i>Cyornis rubeculoides</i> ,	Blyth, ETHERIAL WARBLER.
<i>Stachyris chrysæa</i> ,	Hodg. ARRACAN CREEPER.
<i>Erpornis zantholeuca</i> ,	"
<i>Budytes leuma</i> ,	WAGTAIL.
မြီးငေါက် <i>myee-gnouk</i> .	
မြီးညောင် <i>myee-nyoung</i> .	
<i>Motacilla luzoniensis</i> ,	WATER-WAGTAIL.
သမိတ်ထွယ် <i>tha-bike-lway</i> .	
<i>Enicurus schistaceus</i> ,	ENICURUS.
" <i>maculatus</i> ,	
" <i>immaculatus</i> ,	
ဝင်းရင်ကျား <i>san-yen-kya</i> .	
<i>Nemoricola indica</i> ,	TREE PIPET.
ရဟတ် <i>ya-hat</i> .	
<i>Corydalla Richardii</i> ,	RICHARD'S "
" <i>rufula</i> ,	SLENDER LARK. [TERER.
<i>Soropus nipalensis</i> ,	BROWN WINGED CHAT-
<i>Muscicapa paradisi</i> ,	PARADISE FLY-CATCHER.

<i>Muscicapa carulea</i> , ဝတ်တု sa-tungtu.	PURPLE FLY-CATCHER.
<i>Rhipidura fuscoventris</i> , တိုင်းကား taing-ka.	SMALL “
<i>Muscicapula melanoleuca</i> , <i>Eurylaimus javanicus</i> , <i>Cymbirhynchus nasutus</i> , “ “ affinis,	FLY-CATCHER. BROAD-BILL.
<i>Serilophus lunatus</i> , <i>Corydon sumatranus</i> , ငှက်ဆတ် hgnat-hsat.	

CONIROSTERS.

CONIC-BILLED BIRDS.

<i>Corvus splendens</i> ,	COMMON INDIAN CROW.
“ <i>Culminatus</i> ,	“ “ BLACK “
“ <i>macrorhynchus</i> ,	LARGE-BILLED “
ကျီးကန် kyeegan.	
<i>Psilorhinus magnirostris</i> , Blyth,	BLUE MAGPIE.
<i>Crypsirina vagabunda</i> .	WANDERING PIE.
“ <i>varias</i> ,	Vieil. BENTEOT.
<i>Gracula religiosa</i> .	TALKING MYNAH.
သာဇိကာ tha-leka.	
<i>Sturnus contra</i> .	PIED STARLING.
ဇေက်ချေးတား zayet-khaysa.	
ကျဲဇေက် kywai-zayet.	
<i>Acridotheres cristatellus</i> , Blyth,	SUB-CRESTED MYNAH.
ဇေက်ကြီး zayet-gyee.	
<i>Sturnia malabarica</i> ,	Blyth, WHITE-HEADED MYNAH.
ဇေက် zayet.	
<i>Pastor tristis</i> ?	BLACK MYNAH.
ဇေက် zayet.	
<i>Acridotheres ginginianus</i> .	BANK MYNAH.
<i>Acridotheres griseus</i> ,	Hors. CRESTED MYNAH.
<i>Pastor cristalloides</i> ,	Hodg.
ဇေက်မောက်တင် zayet-moukten.	

<i>Ampeliceps coronatus.</i>	YELLOW-BARRED MYNAH.
<i>Calornis cantor.</i>	CALORNIS MYNAH.
<i>Euplectes Phillipensis.</i>	YELLOW-CAPPED WEAVER BIRD.
ဝါခောင်းကွက်၊ <i>sa-ghoungkwet.</i>	
<i>Munia rubroniger.</i>	BLACK-HEADED FINCH.
<i>Amadina Sinensis.</i>	CHINESE SPARROW.
“ <i>striata.</i>	FIELD “
<i>Passer indicus.</i>	INDIAN “
ဝါ၊ <i>sa.</i>	
<i>Passer montanus.</i>	MOUNTAIN “
“ <i>flaveolus.</i>	YELLOW “
<i>Euspisa flavogularis,</i>	Blyth, BUNTING.
<i>Alauda gulgula,</i>	SKY LARK.
<i>Buceros cavatus,</i>	CONCAVE HORNBILL.
ယောင်ယောင်၊ <i>youngyen.</i>	
<i>Buceros pucoran.</i>	BLACK “
ယောင်ယောင်နက်၊ <i>youngyennet.</i>	
<i>Buceros albirostris,</i>	SMALL “
“ <i>plicatus,</i>	
ဘောက်ချင်း၊ <i>oukkhyen.</i>	

SCANSORES.

CLIMBING BIRDS.

<i>Palæornis nigrirostris,</i>	Hodg. BLACK-BILLED	PARRAKEET.
ကုလား၊ <i>kula.</i>		[KEET.
<i>Psittaca bengalensis,</i>	Briss. BENGALÉE	PARRAKEET.
ကုလား၊ <i>kula.</i>		
ကျေးတမ၊ <i>khay-tama.</i>		
<i>Palæornis torquatus,</i>	Blyth, ROSE-WINGED	“
ကျေးကျိုတ်၊ <i>khaygyoke.</i>		
<i>Palæornis Alexandrinus.</i>	ALEXANDRINE	“
ကျက်တော၊ <i>kyetdau.</i>		
ကျေးမောင်းခါး၊ <i>kyay-phoung-kha.</i>		

<i>Loriculus vernalis</i> , ရွှေနီသီ khywonhto.		RED-RUMPT LORIKEET.
<i>Picus (Geci.) viridanus</i> , Blyth,		GREEN WOODPECKER.
" <i>ocipitalis</i> , Vig.		BLACK-CROWNED GREEN [WOODPECKER.
" <i>flavinucha</i> , Gould,		ARRACAN GREEN "
<i>Picus (meiglyptès) jugularis</i> .		BLACK "
ငှက်သံတောက် hgnet-theettouk.		
<i>Picus (Mic) phaeoceph</i> , Blyth.	INDIAN	"
" (<i>Den.</i>) <i>atratus</i> ,	BLACK BELLIED	"
" " <i>canicapillus</i> ,	RED-PLUMED	"
" (<i>Mic.</i>) <i>ochraceus</i> ,	OCHRACEUS	"
" (<i>Tiga</i>) <i>intermedius</i> , Blyth,	THREE-TOED	"
<i>Bucco indicus</i> ,	INDIAN BARBET.	
ငှက်ပိတ်နီ hgnet-padeing.		
<i>Bucco lineatus</i> ,	GREEN	"
မိုးကောင်း phogoung.		
<i>Bucco asiaticus</i> ,	ASIATIC	"
<i>Trogon</i> " Shaw.		
ကုသလောင်း koke-kha-loung.		
<i>Bucco trimaculatus</i> ,	RED-CHEEKED BARBET.	
ငှက်ပိတ်နီ hgnet-pa-deing.		
<i>Dendrophila frontalis</i> ,	NUTHATCH.	
<i>Cuculus orientalis</i> ,	ORIENTAL CUCKOO.	
မိုးခြွေ oau.		
<i>Cuculus dicruroides</i> ,	KING-CROW	"
<i>Zanclostomus tristis</i> ,	GREEN	"
<i>Melias</i> " Lesson.		
ဝါပလေး wa-phalay.		
<i>Zanclostoma sumatranus</i> ,	SMALL GREEN	"
<i>Chrysococcyx zanthorhyn</i> . Hors.	AMETHYSTINE-PURPLE	[CUCKOO
" <i>lucidus</i> ,		
<i>Centropus Phillipensis</i> ,	CROW PHEASANT.	
မုတ် boke.		

TENUIROSTERS.

SUCTORIAL BIRDS.

<i>Aracknothera inornata</i> , Tem.	HONEY-SUCKER.
ပန်းငုံရင်း <i>panpwen-soke</i> .*	
<i>Nectarinia goalpariensis</i> , Jard.	GOALPARA SUN-BIRD.
“ <i>jugularis</i> , Vieil.	OLIVE-GREEN “
“ <i>flammaxillaris</i> , Blyth,	
<i>Anthreptes phænicotis</i> .	STRAIGHT-BILLED “
<i>Dicæum erythronotum</i> .	RED-BACKED “
“ <i>cantillans</i> .	SUN-BIRD.
<i>Nectarinia asiatica</i> , Lath.	“
SYN. “ <i>mahrattensis</i> .	“
“ <i>Certhia</i> “ “	“
“ “ <i>saccharina</i> , Shaw,	“
<i>Nectarinia Gouldiæ</i> .	“
“ <i>Hasseltii</i> , Tem.	“
SYN. “ <i>Phayrei</i> , Blyth,	“
“ <i>Certhia sperata</i> , Raffles,	“
<i>Dicæum Tickelliæ</i> , Blyth,	“
<i>Upupa epops</i> .	HOOPOE.
တောင်ပိုင်း <i>toungpee-soke</i> .	

FISSIROSTRES.

WIDE-MOUTHED BIRDS.

<i>Merops viridis</i> .	GREEN BEE-EATER.
ငှက်ပဝံင်ထိုး <i>hgnet-pazenhto</i> .	
<i>Alcemerops Athertonii</i> .	LARGE “
ဗျားတူးငှက် <i>pyatu-hgnet</i> .	
<i>Coracias affinis</i> .	ROLLER.
“ <i>assamiensis</i> .	
ငှက်ခါး <i>hgnetkha</i> .	
<i>Eurystomus orientalis</i> .	BROAD-BILLED ROLLER.
မိုယံကောင်းငှက် <i>mokjung-hgnet</i> .	

* All the sun-birds or honey-suckers have the same name in Burmese.

<i>Alcedo bengalensis.</i>	BLUE-BACKED KING-FISH- ER.
မိန်ညင်းကလေး: <i>peingnyen-galay.</i>	
<i>Alcedo sinensis.</i>	LARGE
မိန်ညင်းကြီး: <i>peingnyen-gyee.</i>	
<i>Halcyon gural.</i>	HALCYON.
မိန်ညင်း: <i>peing-nyen.</i>	
<i>Halcyon Ameuropterus,</i>	KING-FISHER (br. winged)
" <i>capensis,</i>	" (blue winged.)
ဆင်မိန်ညင်း: <i>hsen-peing-nyen.</i>	
<i>Ceyx purpurea,</i>	"
မိန်ညည်း: <i>deing-nyeen.</i>	
<i>Harpactes oreskios.</i>	TROGON (head green.)
" <i>erythrocephalus.</i>	" (" red.)
ထုတ္တု: <i>htoke-taru.</i>	
<i>Caprimulgus macrurus.</i>	NIGHTJAR.
" <i>monticolus.</i>	
မြေဝတ်: <i>myaywot.</i>	
ငှက်ခြင်း: <i>hgnetbyen.</i>	
<i>Lyncornis cerviniceps,</i>	Gould, LYN CORNIS.
<i>Hirundo,</i>	SWALLOW.
မြန်ဆွား: <i>pyanhlwa.</i>	
<i>Hirundo rustica.</i>	"
မိုင်းငွေငှက်: <i>mosway-hgnet.</i>	
<i>Hirundo daurica.</i>	"
မြန်ဆွား: <i>pyanhlwa.</i>	
<i>Acanthylis caudacuta.</i>	SPINY-TAILED SWIFT.
<i>Collocalia fuciphaga.</i>	EDIBLE-NEST SWALLOW.
<i>Hirundo</i> "	Thun.
ဒီဝိုင်း: <i>zee-wa-so.</i>	

RAZORES.

GALLINACEOUS BIRDS.

<i>Pavo muticus,</i>	GREEN-NECKED PEACOCK.
ငွေခင်း: <i>oo-doung.</i>	

Polyplectron chinguis,
Pavo tibetanus,
Polyplectron emphanum,
 သွင်းသွင်း *doung*.

Euplocomus lineatus,
 ရှမ်း *yeet*.

Euplocomus Horsfieldii,
Phasianus fasciatus,
Argus giganteus ?
Meleagris gallopavo,
 ကြက်ဆင်း *kyet-hsen*.

Gallus ferrugineus,
 " *bankivus*.

တောကြက် *tau-kyet*.

Pardix Phayrei,
 " *olivacea*,

ခါး *kha*.

Turnix atrogularis,
 နှင်း *ngung*.

Perdix chukar ?

Rollulus (?) ocellatus,
Arboricola atrogularis,
Treron bicincta,
 ငှက် *ngoo*.

Treron nipalensis,
 " *viridifrons*,

" *Malabarica*,

Gampsorhynchus rufulus,
Carpophaga sylvatica,
 " *insignis*.

မြွင်း *pyung-ma-dee*.

ဘွဲ့ *lung-ma-dee*.

Columba insignis,

မြွင်း *gyo-myo*.

PEACOCK-PHEASANT.

(Thibe.)
 (Crested.)

TENASSERIM PHEASANT.

ARRACAN

"

SILVER

"

ARGUS

"

TURKEY.

JUNGLE FOWL.

"

PARTRIDGE.

THREE-TOED QUAIL.

RED, AND PAINTED PART-
 RIDGE.

ROLLULUS.

Blyth,
 Vieil.

YELLOW-BREASTED
 GREEN PIGEON.

Hodg.

NIPAUL GREEN PIGEON.

YELLOWISH-HEADED

GREEN PIGEON.

MALABAR

"

"

Blyth,

GAMPSORHYNCHUS.

FRUIT PIGEON.

Linn.

GROUND PIGEON.

Columba intermedia,ဒို. *kho*.

INDIAN ROCK PIGEON.

Columba punicca," *turtur*,

Linn.

POMPADOUR WOOD PIGEON

TURTLE DOVE.

မြီးလယ်မြောက် *gyo-lay-pyouk*.*Turtur meena*,

FOX-COLOURED TURTLE

DOVE.

မြီးပိတ်တူ *gyo-peing-tuma*.*Calenas nicobarica*,

Blyth, NICOBAR PIGEON.

ခါ. *kha*.

GRALLATORES.

WADING BIRDS.

Ardea alba,ဗျိုင်ဖျိုင် *byeingphyu*.

WHITE PADDY-BIRD.

Ardea.

GREY HERON.

ရေကြက် *yaykyet*.*Nyctiardea*,

Swain. NIGHT "

ငှက်ငှက် *hgnet-gnanwa*.*Ardea malaccensis*,

HERON.

ဗျိုင်အောက် *byaingouk*.*Ardea purpurea*,

"

မြီးရောင် *gyungbyaing*.*Ardea schistacea*,

" (large, slate colour.)

" *fusca*,

" (brown.)

" *ardesiaca*,

" (small, slate colour.)

" *cinere*,

" (com. Brit. brown)

ငှက်ငှက် *hgnet-gnanwa*.ငှက် *gna-heet*.*Nycticorax griseus*,

NIGHT HERON.

Demigretta concolor.

DEMI-EGRET.

Tigrisoma melalophos.

TIGER BITTERN.

Ciconia argala,

Vig.

ADJUTANT.

ထုံးဝင်း *dungvat*.ထုံးမြွက် *dung-myeekwet*. (with handsomest plumes.)

ခုံကလာ။ <i>dung-kula.</i>	BLACK AND WHITE WAD- [ING-BIRD.
<i>Grus antigone,</i>	CRANE.
ကြွကြွ။ <i>gyogya.</i>	
<i>Ibis Macei,</i>	IBIS.
ခရုတ်ဆွဲ။ <i>kharu-sokephu.</i>	
<i>Anastomus coromandelianus,</i>	OPEN-BEAK.
ခရုတ်။ <i>kharu-soke.</i>	
<i>Ralus, vel Fulica,</i>	RAIL OR COOT.
ရေကြက်။ <i>yay-kyet-ma.</i>	
<i>Gallinula javanica,</i>	WATER-HEN.
“ <i>phaenicura,</i>	
ကလွက်။ <i>kalu-kwet.</i>	
<i>Scolopax heteruna,</i>	SNIFE.
မြဝတ်။ <i>myaywot.</i>	
<i>Numenius arquata,</i>	CURLEW.
မိန်းမလက်ထဲငှက်။ <i>meingma-letthai-hgnet.</i>	
ကလာကော့က်။ <i>kulakouk.</i>	
<i>Strepsilas interpres,</i>	TURNSTONE.
<i>Himantopus ostralegus,</i>	OYSTER-CATCHER.
<i>Tringus,</i>	SAND-PIPER.
<i>Totanus,</i>	SNIPPET.
ခင်ရော်။ <i>zenyau.</i>	
<i>Pluvianus spinosus,</i>	SPUR-WINGED PLOVER.
တိတီတု။ တိတီဒု။ <i>teetee-du.</i>	
<i>Pluvianus goensis,</i>	COMMON PLOVER.

NATATOIRES.

SWIMMING BIRDS.

<i>Dendrocygna major,</i>	WILD DUCK.
<i>Plectropterus melanotus,</i>	
တောဝံ။ <i>tau-wombai.</i>	
<i>Dendrocygna arcuata,</i>	TEAL.
စိစိ။ <i>seet-sa-lee.</i>	

- Anser cinereus*, GOOSE.
 " *cygnoides*,
 ငနး ဂနာ.
Pelecanus rufescens ? PELICAN.
 ဝံပိ၊ ဝံပိ၊ wonbo.
Plotus Vaillantii, SNAKE BIRD.
 တင်ကျီ၊ tengyee.
Phalacrocorax Javanicus ? CORMORANT.
 အာရော၊ တင်ကျီ၊ auyau, tengyee.
Sterna poliocerca, Gould, SEA-SWALLOW.
Thalaseus cristatus ? Stevens, "
 မြင်ထွေး၊ myeethway.
Thalasseus, bengalensis, OTHER SEA SWALLOW.
Melanosterna anasthæ, Scopol.
Sterna grisea, Hors.
Anous tenuirostris, Temm.
Larus fuscus ? GULL.
 မြင်ထွေး၊ myeet-htway.
 ပင်လယ်ကျက်တုရေး၊ penlay-kyet-tu-rway.
Rhynchops nigra, SCISSORS-BILL.
 ပင်လယ်ငါးငှက်၊ penlay-pau-hgnet.
Phæton æthereus, TROPIC-BIRD.





MINERALS.

EARTHY MINERALS.

<i>Quartz,</i>	COMMON QUARTZ.	
ဂေါတံ <i>gautan.</i>		
<i>Rock crystal,</i>	CRYSTALIZED QUARTZ.	
မြွေခဲ <i>myaing-seing.</i>		
ဖန်ကျောက် <i>phan-kyouk.</i>		
ခဲပလုတ် <i>seing-paloke.</i>		
<i>Prase,</i>	GREEN	"
	MILKY	"
<i>Amethyst,</i>	VIOLET	"
နီလာခဲ <i>neela-khayen.</i>		
ကျောက်ခဲနီပွင့် <i>kyouk-khayen-pwen.</i>		
<i>Quartz,</i>	YELLOW	"
"	GRANULAR	"
	CAT'S EYE.	
ကျောင်း <i>kyoung.</i>		
	FLINT.	
ခဲသံကျောက် <i>meekhat-kyouk.</i>		
<i>Chalcedony,</i>	COMMON CHALCEDONY.	
မဟူရာဖြူ <i>mahuya-phu.</i>		white.
မဟူရာဝါ <i>mahuya-wa.</i>		yellow.
<i>Cacholong,</i>	MILK-WHITE CHALCEDONY.	
မဟူရာဖြူ <i>mahuya-phu.</i>		
	SARD.	
မဟူရာနီ <i>mahuya-nee.</i>		
	ONYX.	
မဟူရာဖြူကျောင်းဝင် <i>mahuya-phu-kyoung-wen.</i>		

CHALCYDONYX.

မဟူရာကျောင်ဝင်း *mahuya-kyoung-wen.*

SARDONYX.

မဟူရာကျောင်ဝင်း *mahuya-kyoung-wen.*

CARNELIAN.

မဟူရာနီ *mahuya-nee.*

ကြက်သွေး *kyet-thway.*

CARNELIAN.

မဟူရာဝါ *mahuya-wa.*

Heliotrope,

BLOODSTONE.

နဂါးဖွဲ့ *nagathwai.*

Agate,

COMMON AGATE.

မဟူရာ *mahuya.*

မဟူရာကြောင်ဝင်း *mahuya-kyoungwen, striped agate.*

Jasper,

YELLOW JASPER.

မဟာဆတ်အဝါ *mahahsat-awa.*

Jasper,

GREEN

ဆင်တွဲမိန့်ကျောက် *thendwai-seing-kyouk.*

Jasper,

PRECIOUS JASPER.

နဂါးဖွဲ့ *nagathwai.*

Jasper,

STRIPED

Garnet,

COMMON GARNET.

ပဒဲကျောက် *padai-kyouk.*

Almandine,

PRECIOUS

ကျောက်နီ *kyouk-nee.*

မိမြိုက် *htseebhugone.*

inferior variety.

Garnet,

PYROPE.

ဂေါ်မုတ် *gaumoke.*

Slate,

CLAY SLATE.

ROOF

SHALE.

BITUMINOUS SHALE.

GRAPHIC SLATE.

<i>Loam,</i>	SILICIOUS “
<i>Reddle,</i>	CLAYSTONE.
မြေခဲ။ <i>myanee.</i>	IRON CLAY.
	PORCELAIN CLAY.
	POTTER'S “
	BRICK EARTH.
	RED CHALK.
<i>Asbestos,</i>	AUGITE.
<i>Hypersthene,</i>	HORNBLende.
	LABRADOR HORNBLende.
	BLUE SAPHIRE.
နီလာငှက်ခါ။ <i>neela-hgnet-kha.</i>	
နီလာပိန်။ <i>neela-seing.</i>	
<i>Red saphire,</i>	ORIENTAL RUBY.
ကျောက်နီ။ <i>kyouk-nee.</i>	
ပတ္တမြား။ <i>battamya.</i>	
<i>Violet saphire,</i>	“ AMETHYST.
နီလာခရန်။ <i>neela-khayan.</i>	
<i>Yellow saphire,</i>	“ TOPAZ.
ညိုသဏ္ဍာန်။ <i>oukthapha-ya.</i>	
<i>Green saphire,</i>	“ EMERALD.
မြဲ။ <i>mya.</i>	
	CORUNDUM.
ပိန်သွေးကျောက်။ <i>seing-thway-kyouk.</i>	
ရွှေသွေးကျောက်။ <i>shway-thway-kyouk.</i>	
<i>Spinel ruby,</i>	RUBY blood-red.
ကျောက်နီ။ <i>kyouknee.</i>	
ပတ္တမြား။ <i>battamya.</i>	
<i>Balas ruby,</i>	“ rose-red.
<i>Alamandine,</i>	“ violet color.
ပန်ရည်ကျောက်နီ။ <i>pan-yay-kyouk-nee.</i>	
<i>Rubiel,</i>	“ orange-red.
စိဖြူကုံ။ <i>seebyu-gung.</i>	the inferior varieties.

Pleonaste, blackish spinel, CEYLONITE.

နီလာ။ *nee-la.*

AVA GEM-SAND.

COMMON SERPENTINE.

PRECIOUS “

ကျောက်စိန်။ *kyouk-seing.*

ZIRCON.

သီဟိုလ်စိန်။ *theeho-seing.*

BERYL.

စိန်။ *seing.*

ACIDIFEROUS EARTHY MINERALS.

Carbonate of lime,

ကျောက်စက်။ *kyouk-set.*

STALACTITE.

“

STALAGMITE..

“

GRANULAR LIMESTONE.

ကျောက်ဖြူ။ *kyouk-phyunu.*

“

COMMON “

တုံကျောက်။ *tung-kyguk.*

“

CALCAREOUS GRIT.

“

CHALK.

မြေဖြူ။ *mya-phyu.*

“

MARL.

“

CALCAREOUS TUPA.

“

ARRAGONITE.

Magnesian carbonate of lime, DOLOMITE.

အန္ဒကူ။ *andaku.*

Fluate of lime,

FLUOR SPAR.

Crystalized sulphate of lime, SELENITE.

Foliated “ “

ကျောက်သလင်းဂေါတ်။ *kyouktha-len-gautan.*

Sulphate of lime,

FIBROUS GYPSUM.

Sha-koung, (Chinese)

Sulphate of lime,

GRANULAR GYPSUM.

ACIDIFEROUS ALKALINE MINERALS.

<i>Nitre,</i>	SALTPETRE.
<i>Nitrate of potash.</i>	
<i>Prismatic nitre,</i>	
ရန်းပိန်း <i>yan-seing.</i>	
<i>Carbonate of soda,</i>	NATRON.
မြေဆင်ပြာ <i>myay-hsat-bya.</i>	
<i>Borate of soda,</i>	BORAX.
<i>Tincal, (unpurified.)</i>	
လက်ချား <i>let-khya.</i>	
<i>Chloride of sodium,</i>	ROCK SALT.
<i>Muriate of soda.</i>	
ထီးနွားသား <i>theing-dau-hsa.</i>	
<i>Muriate of ammonia,</i>	SAL-AMMONIAC.
ခေက်သား <i>za-wet-tha.</i>	

ACIDIFEROUS ALKALINO-EARTHY MINERALS.

<i>Sulphate of alumine and potash,</i>	ALUM.
ကျောက်ချို <i>kyouk-khyeen.</i>	

ALKALINO-EARTHY MINERALS.

လင်း <i>la-khyay.</i>	MICA.
<i>Adularia,</i>	FELSPAR.
ကျောင်း <i>kyoung.</i>	MOONSTONE.
<i>Steatite,</i>	SOAPSTONE.
ယန်ကုဆံ <i>kang-ku-hsan.</i>	
	CHLORITE.
ကျောက်ပလဲ <i>kyouk-pa-lai.</i>	
<i>Black tourmaline,</i>	SCHORL.
အပြက်နက် <i>apyaik-net.</i>	
အကျွတ်နတ် <i>a kyoot-nat.</i>	
	GREEN TOURMALINE.
ထီဟိုလ်ပိန်း <i>thee-ho-seing.</i>	

YELLOW

သီဟိုလ်မိန့် *thee-ho-seing.*

CEYLON DIAMOND.

ဥသဘရာ၊ သီဟိုလ်မိန့် *oub-tha-phaya.*

Indicolite, white variety, WHITE

အက္ခတ်ဖြူ *a-kywotphyu.*

အဖြိုက်ဖြူ *a-phyaik-phyu.*

Rubelite,

RED

Tourmaline rubelite.

မိန့်နီ *seing-nee.*

MACLE.

METALIFEROUS MINERALS.

PLATINA.

ရွှေဖြူ *shway-phyu.*

sheen-than.

GOLD.

ရွှေ *shway.*

MERCURY.

ပဒါး *pa-da.*

Sulphuret of mercury,

CINNABAR.

VERMILION.

ဟင်းသပဒါးပိုင်း *hen-tha-pada-yaing.*

SILVER.

ငွေ *ngway.*

PURE SILVER.

ဘော်၊ *bau.*

SILVER ORE.

မောရဂီဝါငွေစါးကျောက် *mau-ragee-wangwaysa kyauk.*

COPPER.

ကျေးနီ *kyay-nee.*

COPPER ORE.

မောရဂီဝါကျေးနီစားကျောက် *mau-ta-gee-wa-kyay-nee-sa-kyauk.*

<i>Sulphuret of copper,</i>	MALACHITE.
<i>Green carbonate of copper.</i>	
ဘာလဒုတ္တံ၊ <i>bala-dokta.</i>	
<i>Blue carbonate of copper.</i>	
<i>Sulphate of</i> “	BLUE VITRIOL, OR BLUE STONE.
ဒုတ္တံ၊ <i>dokta.</i>	
	LEAD.
ခဲဝှံ၊ <i>khai-poke.</i>	
ခဲမာဝှံ၊ <i>kui-ma-poke.</i>	
<i>Sulphuret of lead.</i>	GALENA.
<i>Red oxide of lead.</i>	MINIUM.
ဆန်း၊ <i>hsung.</i>	
	BISMUTH.
ကျွတ်၊ <i>gwote.</i>	
	IRON.
သံ၊ <i>than.</i>	
<i>Sulphuret of iron,</i>	IRON PYRITES.
ဗဟန်းကျောက်၊ <i>ba-han-gyok.</i>	
သံတိုက်ကျောက်၊ <i>than-taik-kyouk.</i>	
<i>Octahedral iron ore,</i>	LOADSTONE.
<i>Magnetic oxide of iron.</i>	
သံလိုက်ကျောက်၊ <i>than-laik-kyouk.</i>	
ကျောက်သံစား၊ <i>kyouk-than-tsa.</i>	
	SPECULAR OXIDE OF IRON.
<i>Brown hematite,</i>	BROWN “ “
<i>Ochery red oxide of iron,</i>	RED OCHRE.
မြေခို၊ <i>myay-nee.</i>	
<i>Argillaceous oxide of iron.</i>	CLAY IRON STONE.
သံကျောက်၊ <i>than-kyouk.</i>	
	PISIFORM OXIDE OF IRON.
	BOG IRON ORE.
<i>Sulphate of iron,</i>	COPPERAS.
ဘာလဒုတ္တံ၊ <i>bala-dokta.</i>	
	TIN.

ခဲမ၊ *kha-ma*.

ခဲမဖြူ၊ *kha-maphyu*.

ZINC.

သွတ်၊ *thwot*.

Black oxide of manganese,

MANGANESE.

MOLYBDENA.

ANTIMONY.

တေလကျောက်၊ *tay-lakyouk*.

Oxide of arsenic,

ARSENIC.

မိန့်၊ *seing*.

မိန့်ဖြူ၊ *seing-phyu*.

Red sulphuret of arsenic,

RED ORPIMENT, OR REALGER.

မြင်းသီလာ၊ *myen-thee-la*.

Yellow sulphuret of arsenic, YELLOW ORPIMENT.

ဆေးခန်း၊ *hsay-dan*.

ဆေးခန်းရွှေ၊ *hsay-dan-shway-wa*.

TUNGSTEN.

ခဲမသေ၊ *khai-mathay*.

COMBUSTIBLE MINERALS.

SULPHUR.

ကန်၊ *kan*.

DIAMOND.

မိန့်၊ *seing*.

TREMENHEERITE.

ANTHRACITE.

MINERAL COAL.

ကျောက်မီးသွေး၊ *kyouk-mee-thway*.

LIGNITE.

PETROLEUM.

ရေခဲ၊ *yay-nan*.

Succin,

Succinum,

ပရင်း၊ *payen*.

AMBER.

PLANTS.

Besides the plants that I have examined myself, others are enumerated in this catalogue, that have been collected by Carey, Wallich and Griffith, which I have met with in Roxburgh's "Flora Indica," Voigt's "Hortus Suburbanus Calcuttensis," Lindley's "Genera and Species of Orchideous plants," Bentham's "Labiatarum Genera et Species," De Candolle's "Prodromus Systematis Naturalis Regni Vegetabilis, Pars V." Wight's "Illustrations of Indian Botany," Wight's "Icones Plantarum Indiæ Orientalis," and Wallich's "Plantæ Asiaticæ Rariores."

Many undescribed species will be found designated by the vernacular name of the plant. Thus the sacred Engyen tree of the Buddhists, I have recently discovered by the examination of a flowering branch, to be a new species, and not the Pali *Shorea robusta*, or *Vatica robusta* for which the Burman word stands; and I have designated it in the catalogue, *Vatica engyen*. Again, there is a remarkable species of *Ehretia* in the interior, which I believe to be also new; and that I have in like manner entered as *Ehretia yen-yai-myook-myec*. So in many other instances. It would have been easy for me to have described these plants, and to have given them more classical names; but Griffith undoubtedly collected specimens of most of them, and his collections, will it is hoped, be ultimately examined and described by some scientific botanist, and I have no wish to anticipate him. I have described one plant only, *Pinus Latteri**, and I did so, because I had good reason to believe that Griffith had never seen the tree. Sometimes I have not been able to refer to the description

*See page, 215.

of the plant named by Wallich or others, and the Burman may designate one of those species.

Wallich when on this Coast, collected specimens of wood from the timber trees, and presented them to the Society of Arts in England. Nearly all had the Burmese names Romanized attached to the specimens, and some with the name of the genus to which the tree belonged, but occasionally with a mark of interrogation. I have never been able to identify many of the Burmese names, owing to the arbitrary manner in which the Burmese characters are represented; and where I have succeeded, I have found some of his generic names with the interrogation mark undoubtedly erroneous, thus, he says: "*Laurus,? thitya*," but *thitya* is always applied by the Burmese to a species of *gordonia*. Again, he says: "*Sterculia? kuneenee*;" but this Burmese name is confined to *dipterocarpus*, the wood-oil tree.

Occasionally his specimens were duplicates of the same wood, but with the Burmese name spelled in English two different ways. Thus: "*Town-pine*," is described, without any systematic name; but in another place "*Artocarpus*" is mentioned and the Burmese name given is "*Toung-ben*." The two words designate the same tree *Artocarpus echinatus*. Still, in some instances, where I have been unable to trace him, I have inserted the name in my catalogue on his authority, as he may possibly refer to species with which I am unacquainted. Plants marked exotic, are foreign plants, nearly all the rest are indigenous.

I prefer the classification of Lindley's Vegetable Kingdom to the one I have adopted, but that differs widely from any followed by writers on botany in India; so in order that my Catalogue may be used conveniently with Wight's Prodrômus, and Voigt's Catalogue, works which will be standards in India for the next half century, I have conformed to the arrangement of Lindley, which he used previous to the last edition of his Natural System.

Where there are well established Burmese names,

they will be usually found beneath the systematic ones, but they are often generic and are applied in common to several species. For more than half the plants in the vegetable kingdom, however, the natives have no settled names. Sometimes a tree will have as many denominations as persons are asked for its name; but more frequently a Burman will reply: "*a-la-ga* tree;" that is a useless tree "*sa-ma-knaing* not edible." A tree whose fruit is not edible is not considered worthy of a name.



RANUNCULACEAE, Crowfoots.

<i>Clematis</i> ,	<i>Linn.</i>	Virgin's Bower.	
<i>subpeltata</i> ?			
<i>hedysarifolia</i> ,	<i>D C.</i>		
<i>Naravelia</i> ,	"		
<i>zeylanica</i> ,	"		
<i>Nigella</i> ,	<i>Lin.</i>	Fennel Flower.	
<i>sativa</i> ,	"		ex.
ဓမ္မနက်: <i>sa-mung-net</i> ,			
<i>Delphinium</i> ,	<i>Linn.</i>	Larkspur.	
<i>Ajacia</i> ,	"		ex.

NYMPHÆACEAE, Water-lilies.

<i>Nymphaea</i> ,	<i>Linn.</i>	Water-lily.	
<i>pubescens</i> ,	<i>Willd.</i>	Lotus.	
ကျာဖြူ: <i>kya-phyoo</i> .			
<i>rubra</i> ,	<i>Roxb.</i>	Red Water-lily.	
ကျာနီ: <i>kya-nee</i> .			
<i>stellata</i> ,	<i>Willd.</i>	Blue Water-lily.	
ကျာညို: <i>kya-nyo</i> .			
<i>Barclaya</i> ,	<i>Wall.</i>		
<i>oblongata</i> ,	"		
ကျာခေါင်းလောင်း: <i>kya-ghoung-loung</i>			

NELUMBIACEAE, Sacred Beans.

- Nelumbium, *Juss.* Sacred Bean.
 speciosum, *Willd.*
 ဝေဠုး *pa-dung-ma.*

MYRISTICACEAE, Nutmegs.

- Myristica, *Linn.*
 moschata, *Thunb.* Nutmeg Tree. ex.
 ဝေဠုး *za-te-pho.*
 amygdalina, *Wall.*
 sphaerocarpa, "
 tounng-sag-ga. တောင်ခံကား
 kywai-thwæ. ကွေးလွဲ
 Kneima, *Lour.* Species ?

MAGNOLIACEAE, Magnoliads.

- Michelia, *Linn.* Champac.
 champaca, "
 aurantiaca, *Wall.* ex.
 ခံကား *sag-ga.*
 Sphenocarpus, "
 grandiflorus "
 မိုက်ကြီးပန်း *mo-gyo-ban ?*

ANONACEAE, Custard-apples.

- Anona, *Linn.*
 squamosa, "
 ခြံကား *au-zæ.* Custard-apple. ex.
 reticulata, *Linn.* Bullock's Heart. ex.
 muricata, "
 Uvaria, "
 odorata, " Sweet-scented Uvaria. ex.
 ကပ်ငန်း *ka-dat-gnan.*
 တာဘွတ် တဂွတ်

Uvaria.

lau-ka-dat-gnan,	လာကဒတ်ဂနဲး	
tha-nyo-pra-tha-kwee.		(Sgau.)
" " "	pha-do.	"
" " "	pree-o.	"
" " "	pgha-mu.	"

Uuena,	Linn.
discolor,	Vahl.

တန့်တဲး ta-ngt-sa.

Artabotrys,	Brown.	
odoratissimus,	"	ex.

Guatteria,	Ruiz.
anonæfolia,	A. D C.

Orophea,	Blum.
polycarpa,	A. D C.

Polyalthia,	Blum.
fruticans,	A. D C.

DILLENIACEAE, Dilleniads.

Dillenia,	Linn.	
ornata,	- Wall.	Ornamental Dillenia.

စင်ပွန်း sen-bwon.

ecubrella ?

kyet-sen-bwon, ကျက်စင်းပွန်း

tha-byu, ထပ်

APIACEAE, Umbellifers.

Apium,	Hoffm.	Celery.	
graveolens,	Linn.	Common Celery.	ex.
Petroselinum,	Hoffm.	Parsley.	
sativum,	"	Common Parsley.	ex.
Ptychotis,	Koch.		
Ajowan,	D C.		ex.
Carum,	Koch.	Caraway.	
carvi,	Linn.	Common Caraway.	ex.

စမုတ် sa-mwat.

a

Pimpinella,	<i>Linn.</i>	Anise.	
involucrata,	<i>Wight.</i>		ex.
စပုန့်စပါး sa-mung-sa-ba.			
Anethum,	<i>Linn.</i>	•	
graveolens,	"	Dill.	ex.
စမွတ် sa-muot.			
Sowa,	<i>Rozb.</i>	Sowa,	ex.
စမြိတ် sa-myeik.			
Pastinaca,	<i>Linn.</i>	•	
sativa,	"	Parsnip.	ex.
Cuminum,	"	Cumin.	
Cyminum,	"		ex.
စီယာ zee-ya.			
Coriandrum,	"	Coriander,	
sativum,	"		ex.
နံနံ nan-nan.			
Prionitis,	<i>Delabr.</i>		Species?
Apiaceae.			

kyet-khyæ-ban, ကျက်ချေးပုန်း

HEDERACEAE, Ivyworts,

Paratropia,	<i>D C.</i>		
digitata,	<i>Vaigt.</i>	(<i>P. venulosa</i> , <i>Wight.</i>)	
တလူးတက်ဝါး ba-loo-let-wa.			

VITACEAE, Vineworts.

Vitis.	<i>Linn.</i>	Vine.	
vinifera,	"	Grape Vine.	
စပွန် sa-byet.			
indica,	"		
ရင်စေါင်း yen-doung.			
quadrangularis,	<i>Wall.</i>	(<i>ta-u-litai</i> , <i>Sgau.</i>)	
adnata,	"		
carnosa,	"		
lanceolaria,	"		

Vitis,		
pedata,	Wall.	
auriculata,	"	
wa-young-khyen,	ဝေရင်းရှင်	
yen-hnounge.	ယင်ရှောင်	
bau-sgai-sgau,		(Sgau.)
hto-mo-pgha-mai-kwa,		"
Leea,	Linn.	
macrophylla,	Roxb.	ex.
ကျာထက်ကြီး	kya-bet-gyee.	
crispa,	Linn.	
Staphylea,	Roxb.	
ကလက်	ka-let.	
sanguinea,	Wall.	

OLACACEAE, Olacads.

Olax,	Linn.	Species ?
Ximenia,	Plum.	"

ONAGRACEAE, Evening Primroses.

Jussieua,	Linn.	
repens,	"	
villosa,	Lam.	
Ludwigia,	Roxb.	Water Purslain.
parviflora,	"	

COMBRETACEAE, Myrobalans,

Terminalia,	Linn.	
Catappa,	"	Country Almond.
hialata,	Wall.	
Bellerica,	Roxb.	
ဆန်းခါး	ban-kha.	
Chebula,	Retz.	
ကျာ	kya-zag.	
Pentaptera,	Roxb.	
theet-kha.	သစ်ခါး	
sa-kho-pghau,		(Sgau.)

- Poivreá, *Comm.*
 Roxburghii, *D C.*
 သမီးကံ *sha-ma-ka.*
 Combretum, *Lof.*
 Wightianum, *Wall.*
 Lumnitzera, *Willd.*
 racemosa, "
 Quisqualis, *Rumph.*
 indica, *Linn.* Rangoon Creeper. *ex.*
 သေးဝယ်ခိုင်း *da-way-hmaing.*

ALANGIACEAE, Alangiads.

- Alangium, *Lam.*
 decapetalum, "
 Stylidium, *Brown.* (Three species.)

RHIZOPHORACEAE, Mangroves.

- Rhizophora, *Lam.* Mangrove.
 conjugata, *Linn.*

မြပျ. *pyu.*

- Ceriops, *Arnott.* "
 Roxburghianus, "
 Kandelia, *Wight.* "
 Rheedii, "

ကဘျိုင် *ka-byaing?*

- Bruguiera, *L'Herit.* "
 Rheedii, *Bl.*
 eriopetala, *Wight.*
 parviflora, "

မြပျ. *pyu.*

- Carallia, *Roxb.* "
 lucida, "

ခေါင်း *soung?*

MEMECYLACEAE, Memecylads.

- Memecylon, *Linn.*
 ramiflorum, *Lam.*
 မြင်းနွေးတညက် *myen-khya-ta-nyet*

MELASTOMACEAE, Melastomads.

Melastoma,	<i>Burm.</i>	
malabathricum,	<i>Linn.</i>	Melastoma.
ရှင်ပျံး <i>mycet-pyai.</i>		
amœnum,	<i>Wall.</i>	
Osbeckia,	<i>Linn.</i>	Species ?
Sonerila,	<i>Roxb.</i>	"

MYRTACEAE, Myrtle Blooms.

Melaleuca,	<i>Linn.</i>	
Cajuputi,	<i>Roxb.</i>	Cajuput-oil Tree.
Psidium,	<i>Linn.</i>	Guava.
pyriferum,	"	" white, ex.
pomiferum,	"	" red, "
မာလာကာ <i>ma-la-ka.</i>		
Myrtus,	<i>Linn.</i>	Myrtle.
communis,	"	ex.
Jambosa,	<i>D C.</i>	Jambo.
vulgaris,	<i>Linn.</i>	Rose Apple. ex.
malaccensis,	"	Malay Apple. "
သံပြာသင်္ကြံ <i>tha-byu-tha-byæ.</i>		
nau-ka-phgbau-htee,		(Sgau.)
" " " <i>ka-seu</i>		"
Caryophyllus,	<i>Linn.</i>	
aromaticus,	"	Clove Tree. ex.
လေးညင်းပွင့် <i>læ-nyen-pwen.</i>		
Acmena,	<i>D C.</i>	
leptantha,	<i>Wight.</i>	
သင်္ကြံ <i>tha-byæ.*</i>		
zeylanica,	"	
bractiolata ?	"	
grata,	<i>Wall.</i>	
pulchella,	<i>Roxb.</i>	

*A generic term for all the species of this and the following genus.

<i>Syzygium,</i>	<i>Gært.</i>	
odoratum,	<i>D C.</i>	
Toddalioides,	<i>Wight.</i>	
Wallichii,	"	
polyantha,	"	
Jambolana ?	<i>Lam.</i>	
cymosa,	"	
rubens,	<i>Roxb.</i>	
grandis,	"	
thumra,	"	
(<i>Eugenia</i> ,) formosa,	<i>Wall.</i>	
tha-byæ-htan-sheet.	သပြေထင်ရှစ်	
" " hsat-khyæ.	သပြေဆတ်ချွေ	
" " ta-o-kyay	သပြေတဆိုးကျယ်	
" " khyen.	သပြေရှင်	
" " nee.	သပြေခိုး	
kywai-laik-tha-byæ.	ကျွဲလိုက်သပြေ	
<i>Sonneratia,</i>	<i>Linn.</i>	
acida,	<i>D C.</i>	Sour Sonneratia.
တဝုးတဝုး ta-bu.	ta-mu.	
apetala,	<i>Buch.</i>	Weeping Sonneratia.
ကမ်ဗလာ kam-ba-la.		
thaumma,	<i>Wall.</i>	
<i>Punica,</i>	<i>Linn.</i>	
Granatum,	"	Pomegranate. ex.
သလဲ tha-lai.		

BARRINGTONIACEAE, Barringtoniads.

<i>Barringtonia.</i>	<i>Forst.</i>	
acutangula.	<i>Gartn.</i>	Scarlet-flowered.
ကျဲသား kyai-tha.		
kyai-gyee, ကျဲကြီး		White-flowered.
speciosa ?	<i>Linn.</i>	

- Careya**, *Roxb.*
 arborea, " *Careya.*
 သန့်ဆွေး၊ *ban-bwæ.*
 japonica. ex.

LORANTHACEAE, Mistletoeworts.

- Loranthus**, *Linn.*
 kyec-boung, ကျီးပေါင်း၊ (several species.)

CUCURBITACEAE, Gourds.

- Mukia**, *Arn.*
 scabrella, "
 သွတ်ခါး၊ *tha-bwot-kha.*
Citrullus, *Schrad.*
 Cucurbita, " *Water Melon.* ex.

မိန့်သွါး၊ ဖရဲ၊ *pha-rai.*

- Momordica**, *Lin.*
 Charantia, "
 ကျက်ဟင်းခါး၊ *kyet-hen-kha.*
 diœca, *Roxb.*
 ဓပွတ်၊ *sa-byet.*

- Luffa**, *Cav.*
 pentandra, *Roxb.* ex.
 သွတ်၊ *tha-bwot.*
 fœtida, *Cav.* ex.
 သွတ်ခဲ၊ *tha-bwot-kha-wai.*

tha-bwot-hinwæ. သွတ်ဆွေး၊

- Benincasa**, *Savi.*
 cerifera, " *White Gourd, or*
Pumpkin. ex.

ကျောက်ဖရဲ၊ *kyouk-pha-yung.*

- Lagenaria**, *Ser.*
 vulgaris, " *Bottle Gourd, or*
White Pumpkin. ex.

ဘူးဆင်စွယ်၊ *boo-hsen-sway.*

Trichosanthes,	Lin.		
anguina,	"	Snake Gourd.	ex
ပဲလင်းခွေ။	pai-len-mwæ.		
cucumerina,	Lin.	Bitter Gourd.	ex.
သတ္တဝါး။	tha-bwot-kha.		
bracteata,	Voigt.		
Cucumis,	Lin.		
Melo,	"	Musk Melon.	ex.
သခွီးမွဲး။	tha-khwa-hmwæ.		
sativus,	Lin.	Cucumber.	ex.
utilissimus,	Roxb.		
သခွီး။	tha-khwa.		
tha-khwa-khyen,	သခွီးခွင်။		
" "	me-gyoung-oo,	" မိကြောင်းခွ။	
" "	kouk-yen,	" ကေါက်ရင်။	
" "	lat,	" " လတ်။	
htee-htouk-soo.		(Pwo.)	
Cucurbita,	Lin.		
maxima,	Duch.	Red Gourd, or Squash Gourd.	ex.
ရွှေပရင်။	shwæ-pha-yung.		
pha-yung-kha,	ပရင်ခါး။		
Coccinia,	Wight.		
grandis,	Voigt.		
ken-bung,	ကင်းဘုင်။		
sa-tha-khwa.	စါသခွီး။		
Zanonia,	Lin.		
kyee-a,	ကျီးအါ။		
Cucurbitaceae.			
boo-kha,	ဘူးခါး။		
tha-ka-hai.	thai-thau.	(Sgau.)	

CACTACEAE, Indian Figs.

Opuntia,	<i>Tournef.</i>		
Dillenii,	<i>Haw.</i>	Prickly Pear.	ex.
ကလိခေါင်း၊	<i>ka-la-zoung.</i>		
cochinillifera,	<i>Hag.</i>		ex.
ကလိခေါင်းလက်ဝါး၊	<i>ka-la-zoung-let-wa.</i>		
Pereskia,	<i>Plum.</i>		
Bleo,	<i>Humb.</i>		ex.

HOMALIACEAE, Homaliads.

Blackwellia,	<i>Commers.</i>		
spiralis,	<i>Wall.</i>		

MESEMBRYACEAE, Fig-marygolds.

Glinus,	<i>Linn.</i>		
dictamnoides,	"		

BEGONIACEAE, Begoniads.

Begonia,	<i>Linn.</i>		
humilis,	<i>Dryand.</i>		ex.
kyouk-khyen-boung,	ကျောက်ခွံလောင်း		

BRASSICACEAE, Crucifers.

Nasturtium,	<i>Brown.</i>		
officinale,	"	Water Cress.	ex.
New species,	<i>Griff.</i>		
Cochlearia,	<i>Tournef.</i>		
Armoracia,	<i>Linn.</i>	Horse-radish.	ex.
Lepidium,	"		
sativum,	"	Garden Cress.	ex.
စမုန်နီ၊	<i>sa-mung-nee.</i>		
Brassica,	<i>Linn.</i>		
oleracea,	"	Cabbage.	ex.
သင်္ဘောမုန်လာ၊	<i>them-bau-mung-la.</i>		
Rapa,	<i>Lin.</i>	Turnip.	"
မုန်လာဥပိုင်း၊	<i>mung-la-oo-waing.</i>		

<i>Sinapis,</i>	<i>Lin.</i>		
<i>mung-nyen,</i>	မုန်ညင်း		
<i>tha-ba-mee,</i>			(Sgau.)
<i>Raphanus,</i>	<i>Linn.</i>		
<i>sativus,</i>	"	Radish.	ex.
မုလေး	<i>mung-la.</i>		

CAPPARIDACEAE, Capers.

<i>Polanisia,</i>	<i>Rafn.</i>		
<i>icosandra,</i>	<i>Wight.</i>		
<i>Cratæva,</i>	<i>Linn.</i>		
<i>Roxburghii,</i>	<i>Brown,</i>	Threc-leaved Caper.	ex.
ကတတ်	<i>ka-dat.</i>		
<i>Capparis,</i>	<i>Linn.</i>		
<i>Pandurata,</i>			
(Other species.)			

RESEDACEAE, Weldworts.

<i>Reseda,</i>	<i>Linn.</i>		
<i>odorata,</i>	"	Mignonette,	ex.

VIOLACEAE, Violetworts.

<i>Viola,</i>	<i>Linn.</i>	Violet.	
<i>odorata,</i>	"	Sweet Violet.	ex.

MORINGACEAE, Moringads.

<i>Moringa,</i>	<i>Burm.</i>	Horse-radish Tree.	
<i>pterygosperma,</i>	<i>Gartn.</i>	Oil-o-ben Tree.	ex.
မုလေး	<i>da-tha-hoon.</i>		

DROSERACEAE, Sundews.

<i>Drosera,</i>	<i>Linn.</i>		
<i>indica,</i>	"		
<i>pehata,</i>	<i>Wight.</i>		

PASSIFLORACEAE, Passionworts.

Passiflora,	<i>Linn.</i>	Passion-flower.	
laurifolia,	"	Laurel-leaved Passion	
		Flower, or Water-le-	
		mon Vine.	ex.
အာသာဝတီ၊	<i>a-tha-wa-dee.*</i>		
biflora,	<i>Lam.</i>		"
quadrangularis,	<i>Linn.</i>	Granadilla.	"
foetida,	<i>Cav.</i>	Foetid Passion Flower.	
filamentosa,	<i>Willd.</i>		ex.
Murucua,	<i>Tournef.</i>		
ocellata,	<i>Pers.</i>		ex

PAPAYACEAE, Papayads.

Carica,	<i>Lin.</i>		
Papaya,	"	Pawpaw.	ex.
သင်္ဘောသီး၊	<i>them-bau-thee.</i>		

FLACOURTIACEAE, Flacourtiads,

Flacourtia,	<i>L' Herit.</i>		
inermis,	<i>Roxb.</i>		

TURNERACEAE, Turnerads.

Turnera,	<i>Lin.</i>		
trioniflora,	<i>Sims.</i>	Laughing Flower.	ex.
ulmiflora,	<i>Lin.</i>		"

BIXACEAE, Bixads.

Bixa,	<i>Lin.</i>		
Orellana,	"	Arnotto.	ex.
သီတင်း၊ ပန်း၊	<i>thee-den. pan.</i>		

GARCINIACEAE, Guttifers.

Garcinia,	<i>Lin.</i>		
mangostana,	"	Mangosteen.	ex.
မင်းကူး၊	<i>men-gu.</i>		
cornea,	"		

* Applied to all the species of the genus.

Garcinia,Roxburghii, *Wight.*တောင်တဲလ် *toung-da-lai.*elliptica, *Wall.* Gamboge Tree.သနတ်တော် *tha-nat-dau.*pictoria, *Roxb.*သနတ်တော် *tha-nat-dau.*Merguensis, *Wight.*speciosa, *Wall.*

pa-gyay-theing, ပကျယ်သိန်

pa-ra-wa, ပရဝါ

Mesua, *Lin.* Singalese Iron-wood Tree.ferrea, " Nagakeshura, *ex.*pedunculata, *Wight.*ကင်္ဂော *ken-gau.* (generic.)**Calophyllum,** *Lin.*Inophyllum, " Fragrant Calophyllum. *ex.*ပွန်ညက် *phung-nyet.*Burmanni, *Wight.*

tha-ra-bee, ထာရဘီ

HYPERICACEAE, Tutsans.**Norysca,** *Spach.*chinensis, *Voigt.* *ex.***Brathys,** *Mut.*japonica, *Wight.***Hypericum,** *Lin.* St. John's Wort. (species ?)**TERNSTROMIACEAE, Theads.****Anneslea,** *Wall.*

fragrans, "

Eurya, *Thunb.*angustifolia, *Wight.*thuang ? *Wall.*

Gordonia,	<i>Ellis.</i>	
<i>floribunda,</i>	<i>Wall.</i>	
သစ်ထွေး၊	<i>theet-ya.</i>	
<i>a-nan-pho,</i>	အနံ့ပိုး	
Thea,	<i>Lin.</i>	Tea Plant.
<i>chinensis,</i>		ex.
Ternstroemiaceæ.		
<i>puzzeen-xwa.</i>	<i>Wall.</i>	

SAPINDACEAE, Soapworts.

Cardiospermum,	<i>Lin.</i>	Heart-seed.	
<i>Halicacabum,</i>	"		ex.
မလဲ၊	<i>ma-la-mai.</i>	(generic.)	
<i>canescens,</i>	<i>Wall.</i>		
Sioja,	<i>Buch.</i>		
<i>sanguinaria.</i>	"		
Sapindus,	<i>Lin.</i>	Soapberry Tree.	
<i>saponaria,</i>	"		ex.
<i>rubiginosus,</i>	<i>Roxb.</i>		
<i>Polyphylus,</i>	"		
<i>hseik-khyæ,</i>	ဆိပ်ချေး၊*		ex.
Cupania,	<i>Plum.</i>		
<i>sapida,</i>	<i>Cambess.</i>	Akee Tree.	ex.
Baccaurea,	<i>Lour.</i>		
<i>Pierardi,</i>	<i>Buch.</i>	Lutqua.	
Nephelium,	<i>Lin.</i>		
<i>Lichi,</i>	<i>Wight.</i>	Lichi.	ex.
<i>longan,</i>	<i>Cambess.</i>		
ကျက်မောက်၊	<i>kyet-mouk.</i>		

*This may be one of the above species of which my books do not furnish full descriptions. It is called "Red Nephelium" on page 125, but it ought to be "Red Sapindus" for on examining the flower, I find it a sapindus and not a nephelium.

b

- Schleichera*, *Willd.*
 kyet-mouk, ကျက်မောက်
 hsen-kyet-mouk, ဆင်ကျက်မောက်
 tha-ka-peu-mæ-sai-ghau. (Sgau.)
 " " hto-æ-kau. "
Pierardia, *Jack.*
 kanna, kuzzo ? *Wall.*

POLYGALACEAE, Milkworts.

- Polygala*, *Lin.* (Species ?)
Salomonina, *Lour.*
 three species, *Griff.*
Xanthophyllum, *Roxb.*
 sa-phew, *Wall.* (Two other species.)

ELATINACEAE, Water-peppers.

- Bergia*, *Lin.*
 verticillata, *Willd.*
 ammannoides, *Roxb.*

STERCULIACEAE, Sterculiads.

- Isora*, *Schott.*
 corylifolia, " (fruit in bazar,)
 သူငယ်ချေ *thu-gnay-khyæ.*
Helicteres, *Lin.*
 elongata, *Wall.*
 pulchra, "
Heritiera, *Ait.*
 attenuata, *Wall.*
 ကနဗိုး *ka-na-zo.*
 minor, *Lam.* Soondree.
 ကနဗိုး *ka-na-zo.*
Sterculia, *Lin.*
 foetida, " Foetid Sterculia,
 လက်ခုပ် *let-khoke.*

Sterculia,			
<i>alata,</i>	<i>Roxb.</i>	Boodh's Cocoanut.	
<i>ornata,</i>	<i>Wall.</i>		
<i>shau-nee,</i>	ရှော်နီ		
" <i>dung,</i>	ရှော်ဒုင်		
<i>theet-ka-do,</i>	သစ်ကတိုး	<i>Wall.</i>	
Southwellia,	<i>Salisb.</i>		
<i>Balanghai,</i>	<i>Schott.</i>	China chestnut.	
<i>versicolor,</i>	<i>Wall.</i>		
Scaphium,	<i>Endl.</i>		
<i>Wallichii,</i>	"		
Durio,	<i>Lin.</i>		
<i>zibethinus,</i>	"	Dorian.	ex.
<i>သုရည်း</i>	<i>du-yeen.</i>		
<i>du-yeen-yaing,</i>	သုရည်းရိုင်း		
Gossampinus,	<i>Buch.</i>		
<i>Rumphii,</i>	<i>Schott.</i>	White Silk-Cotton Tree.	ex.
<i>သဘော်လဲ</i>	<i>them-bau-lai.</i>		
Salmalia,	<i>Schott.</i>		
<i>malabarica.</i>	"	Red Silk-Cotton Tree.	
<i>လက်ပံ</i>	<i>lepan.</i>	<i>လဲ</i>	<i>lai.</i>
<i>insignis,</i>	"		
Pentapetes,	<i>Lin.</i>		
<i>phœnicea,</i>	"		
Melhania,	<i>Forsk.</i>		
<i>Hamiltoniana,</i>	<i>Wall.</i>		
Pterospermum,	<i>Schreb.</i>		
<i>aceroides,</i>	<i>Wall.</i>		
Eriolæna,	<i>D C.</i>		
<i>Candollii,</i>	<i>Wall.</i>		
Theobroma,	<i>Lin.</i>		
<i>Cacao,</i>	"	Chocolate-nut Tree.	ex.
Waltheria,	"		
<i>indica,</i>	"		
Sterculiaceæ,			
<i>thæ-tha-ka-la,</i>		(Sgau.)	

MALVACEAE, Mallowworts.

<i>Althea</i> ,	<i>Lin.</i>		
<i>rosea</i> ,	<i>Cav.</i>	Hollyhock.	ex.
<i>Urena</i> ,	<i>Lin.</i>		
<i>lobata</i> ,	"		
<i>speciosa</i> ,	<i>Wall.</i>		
<i>rigida</i> ,	"		
<i>macrocarpa</i> ,	"		
ကပ်စေးနဲ၊ ဝက်ချွပ်နဲ* : <i>wet-khyæ-pa-naï.</i>			
<i>Sida</i> ,	<i>Lin.</i>		
<i>acuta</i> ,	<i>Burm.</i>		
<i>humilis</i> ,	<i>Willd.</i>		
<i>cordifolia</i> ,	<i>Lin.</i>		
<i>stipulata</i> ,	<i>Pav.</i>		
ပျံခင်းငလင်* : <i>pyen-dan-gna-len.</i>			
<i>Abutilon</i> ,	<i>Monch.</i>		
<i>graveolens</i> ,	<i>Wight.</i>		ex.
<i>indicum</i> ,	<i>G. Don.</i>	Country Mallow-Leaf.	
သားမချုပ် : <i>tha-ma-khyoke.</i>			
<i>striatum</i> ,	"		
<i>Pavonia</i> ,	<i>Cav.</i>		
<i>rosea</i> ,	<i>Wall.</i>		
<i>Hibiscus</i> ,	<i>Lin.</i>		
<i>surrattensis</i> ,	"		
<i>Lindleyi</i> ,	<i>Wall.</i>		
<i>Lampas</i> ,	<i>Cav.</i>		
သင်ပန် : <i>then-ban.</i>			
<i>lunarifolius</i> ,	<i>Willd.</i>		
<i>Rosa sinensis</i> ,	<i>Lin.</i>	Shoe Flower.	ex.
<i>rubro-plenus</i> ,		double-flowered red.	
<i>flava</i>	"	"	yellow.
<i>carneo</i>	"	"	flesh-colour.
<i>luteo</i>	"	"	light yellow.
<i>variegato</i>	"	"	variegated.
ခေါင်ရမ်း : <i>khoun-g-yan.</i>			

*Applied to all the species.

- Hibiscus**,
 hirtus, Lin. ex.
 cannabinus, "
 vitifolius, "
 mutabilis, " Changeable Rose Hibiscus. ex.
 Sabdariffa, " Roselle. "
 သထော့ခွင်ပေါင်း them-bau-khyen-boung.
 tau-khyen-boung, တောခွင်ပေါင်း
 khyen-boung-phyoo, ခွင်ပေါင်းမြို့
Abelmoschus Medik.
 esculentus, Wight. Okra. ex.
 ချပ်မတ်၊ ချပ်မတော၊ yung-ma-dæ.
 moschatus, Monch. Musk Mallow, or Musk Plant.
 သထူဝါ၊ ba-hu-wa.
 crinitus, Wall. (Bamia crinitata ?)
Paritium, St. Hil.
 macrophyllum, G. Don.
 သက်မွေရှင်း bet-mwæ-shau.
 tiliaceum, St. Hil. Tortuous Hibiscus.
 လျှပ်ညှာရှင်း lyee-nya-shau.
Thespesia, Corr.
 populnea, " Poplar Hibiscus. ex.
Gossypium, Lin. Cotton.
 acuminatum, Roxb. Pernambuco Cotton. ex.
 ဝါကုတာ၊ wa-ku-la.
 herbaceum, Lin. Native Cotton. ex.
 ဝါ၊ wa.
 barbadense, Lin. Sea-Island Cotton. ex.
 aboreum, " Tree Cotton. "
 ခွီ၊ nu-wa.

DIPTEROCARPACEAE, Dipterads.

Vateria, Lin. Gum Anime, or Piney Varnish Tree.

Roxburghiana, Wight.

လက်တောက်၊ *let-touk.*

pan-theet-ya, ပန်သီယာ၊

Vatica, Lin.

obtusa, Wall.

en-khyen, အင်ရှင်း၊

ka-nyeen-byan, ကညည်ပြီ၊

koung-hmu, ကောင်းမှု၊

Dipterocarpus, Gartn. Wood-Oil Tree.

laevis. Buch. Wood-oil Copaiva Tree.

ကညည်နီ၊ *ka-nyeen-nee.*

grandiflora, Wall.

အင်း၊ *en.*

alatus, Roxb.

Hopea, “

odorata, “

သင်ကန်း၊ *then-gan.*

then-gan-pha-yung, သင်ကန်းခုံ၊

floribunda, Wall. tantheya,

Dipterocarpaceae.

ကွတ်၊ *ka-dwot.*

TILIACEAE, Linden Blooms.

Corechorus, Lin.

trilocularis, “

olitorius, “

capsularis, “

Triumfetta, “

bet-won, ဇက်ဝန်း၊

Grewia,	Lin.	
<i>pilosa,</i>	Lam.	
<i>lævigata,</i>	Vahl.	
<i>vimineu,</i>	Wall.	
<i>humilis,</i>	"	
<i>microstemma,</i>	"	
<i>floribunda,</i>	"	
myat-ya, မြတ်ယာ၊		
ta-yau, တာယု၊		
Berrya,	Roxb.	
<i>Ammonilla</i> 1	"	Trincomalee Wood.
Monocera,	Jack.	
<i>Griffithii,</i>	Wight.	
Elæocarpus,	Lin.	
<i>angustifolius,</i>		
<i>longifolius,</i>	Bl.	
tau-mag-gee, တာမန်းကျည်း၊		
than-lwen, သံလွင်၊		
wa-hso-ban, ဝါဆိုပန်း၊		

LYTHRACEÆ, Loosestrifes.

Ammannia,	Lin.	
<i>vesicatoria,</i>	Roxb.	
<i>indica,</i>	Lam.	
Cuphea,	Jacq.	(Species ?)
Lawsonia,	Lin.	Cypress Plant, Camphire, or Henna Tree. ex.
<i>alba,</i>	Lam.	
ဝင်း dan.		
Lagerstrœmia,	Lin.	
<i>indica,</i>	"	Indian Lagerstrœmia. ex.
<i>Reginæ,</i>	Roxb.	Jarool.
<i>macrocarpa,</i>	Wall.	"
ခမောင်းနီ၊ ဂွင်းမ၊ <i>pyen-ma.</i>		
kha-moung-thway, ခမောင်းသွယ်၊		
" " <i>phyu,</i> ခမောင်ဖြူ၊		

Duabanga ? *Buch.*
 Sonneratioides, " (*Lagerstroemia grandiflora*, *Roxb.*)

Pemphis, *Forst.*
 acidula, "

MELIACEAE, Meliads.

Melia, *Lin.*
 azedarach, " Persian Lilac, Pride-of-China, Pride-of-India, or Bead Tree. ex.

ကမါခါး *ka-ma-kha*
 Azadirachta, *Ad. Juss.* Neem Tree.
 indica, " " ex.

သင်္ဘောကမါခါး *them-bau-ka-ma-kha*.

ka-ma-a-pæ, (Pwo.)

Mallea, *Ad. Juss.*
 intergerrima, *Wall.*

Walsura, *Roxb.*
 villosa, *Wight.*

Sandoricum, *Cav.*
 indicum, " " ex.

သစ်တို *theet-to*,

Xylocarpus, *Kon.*
 Granatum, " Sea Cocóanut.

ပင်လယ်အုပ် *pen-lai-ung*.

keannan, *Wall.* ကျပ်နှံ

Carapa, *Aubl.*

taila-oon, *Wall.*

Meliaceae,
 kauzuo, kuzzo, "

CEDRELACEAE, Cedrelads.

Swietenia, *Lin.*
 Mahagoni, " Mahogany Tree. ex.

AURANTIACEAE, Citronworts.

Triphasia, *Lour.*
 trifoliata, *D C.* Three-leaved Triphasia. ex.

- Limonia**, Linn.
 alternans, Wall.
 tau-shouk, တောရှောက်
Glycosmis, Corr.
 arborea, B. C.
Murraya, Kon.
 exotica, Lin. Cosmetic-bark Tree.
 သနတ်ခါး, tha-nat-kha.
 may-kay, မယ်ကယ်, Wall.
Luvunga, Buch.
 tavoyana, Lindl.
Feronia, Corr.
 Elephantium, " Wood-apple.
 မှန်, hman. ex.
Egle, Corr.
 Mafmelos, " Bengal Quince. ex.
 ဥရှစ်, oo-sheet.
Citrus, Lin.
 decumana., " Shaddock or pumplemass. ex.
 ရှောက်တုံတီး, shouk-tung-o.
 aurantium, Lin, Orange. ex.
 လိင်မော်, lieng-mau.
 búng-zen. စုံစုံ.
 bergamia, Rissd. Sour lime. ex.
 သံဗရာ, ရှောက်, than-ba-ya. shouk.
 limetta, Rissd. Sweet Lime. ex.
 ရှောက်လိင်မော်, ရှောက်ချို, shouk-lieng-mau.
 shouk-khyo.
 medica, Lin. Common Citron. ex.
 ရှောက်တခွါး, shouk-ta-khwa.
 torosa, Double-leaved Citron. ex.
 ရှောက်ပုတ်, shouk-pouk.
 စုံကုတ်-kha, ရှောက်ခါး

RHAMNACEAE, Buckthornworts.

Ziziphus,	<i>Tournef.</i>	
Jujuba,	<i>Lam.</i>	Jujube Tree. ex.
ဇီးနဲ hzee.		
• CEnoplia,	• <i>Schult.</i>	
tau-hzee, တောဇီး		
pen-lay-hzee, ပင်လယ်ဇီး		
Ventilago,	<i>Gartn.</i>	
maderspatana,	"	
Colubrina,	<i>Richt.</i>	
usiatica,	<i>Brogn.</i>	
macrophylla,	<i>Wall.</i>	

CHAILLETIACEAE, Chailletiad.

Moacurra,	<i>Rorb.</i>	(Species?)
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EUPHORBIACEAE, Spurgeworts.

Cicca,	<i>Lin.</i>	
disticha,	"	Otalheite Gooseberry. ex.
သင်္ဘောဇီးခြုံ them-bau-hzee-phy.		
Phyllanthus,	<i>Rorb.</i>	
hzee-phyoo, ဇီးခြုံ		
kyet-tha-hen, ကျက်သားဟင်း		
Xylophylla,	<i>Lin.</i>	
elongata,	<i>Lodd.</i>	ex.
Agyneia,	<i>Lin.</i>	
coccinea,	<i>Buch.</i>	
ထမင်းဆုတ်ကြီး hta-hmen-hsokc-gyce.		
Bridelia,	<i>Willd.</i>	
amoena,	<i>Wall.</i>	
Croton,	<i>Lin.</i>	
polyandra,	<i>Rorb.</i>	ex.
သဒ္ဓါ thq-dee-wa.		

Croton,

Tiglium, Lin. Croton-oil Plant. ex.

ခန့်ရီ၊ *khan-na-kho.*

malvæfolium,

Pavana, Hamil. Ava Croton.

စတဲ-ယေ-နီ၊ သက်ရင်းနီ။

“ “ ka-dau, သက်ရင်းကတောင်၊ Rangoon Croton.

Rottlera, Rox.

kioun-la, Wall.

memasho, “

Codiaeum, Rumph.

Chrysostictan, “ Variegated Croton. ex.

Ricinis, Lin.

communis, “ Castor-oil Plant. ex.

ကျက်ဆူ၊ *kyet-hsoo.*

Mappa, Lin.

Janipha, Kth.

Manihot, “ Tapioca Plant, ex.

ပုလောပိန့်မြောက်၊ *pu-lau-pe-nang-myook.*

Jatropha, Lin.

Curcas, “ Physic Nut. ex.

သင်္ဘောကြက်ဆူ၊ *them-bau-kyet-hsoo.*

multifida, Lin. Coral Plant. ex.

panduræfolia, ex.

Acalypha, Lin.

indica, “

Tragia, Plum.

ဇက်ယား၊ *bet-ya.*

Stylodiscus, Bennett.

trifolius, “

- Excoecaria**, *Lin.*
Agallocha ? " **Blind Aloes.**
 တယေားကယေား *ta-yau, ka-yau.*
Euphorbia, *Lin.*
Bojeri, *Hook.* **Bojer's Euphorbia.** *ex.*
Ligularia, *Roxb.*
 ရှားစောင်း *sha-zoung.*
sessiliflora, *Roxb.*
hirta, *Lin.* **Spurge.**
jacquiniflora,
sha-zoung-gyee, ရှားစောင်းကြီး
 " " **pyat-that**, " " တွတ်သတ်
 " " **khyen**, " " ခွင်း
 " " **kha**, " " ခါး
 " " **nway**, " " နွယ်
 " " **myen-na**, " " မြင်နီ
 " " **let-nyo**, " " လက်ညှိုး
oke-hnai, အုတ်နှံ
kyouk-oke-hnai, ကျောက်အုတ်နှံ
Poinsettia, *Grah.*
pulcherrima, " *ex.*
Pedilanthus, *Neck.*
tithymaloides, *Poit.* **Jew Bush.** *ex.*
Govania, *Wall.*
nivea, "
Euphorbiaceæ, "
ya-ma-na, ယမာနေ
ken-gung, ကင်ကောင် ?

CELASTRACEAE, Spindle Trees.

- Lophopetalum**, *Wight.*
ambriatum, "

HIPPOCRATEACEAE, Hippocrateads.

Salacia,	Lin.
prinoides,	D C.
verrucosa,	Wight.
multiflora,	"

MALPIGHIACEAE, Malpighiads.

Malpighia,	Lin.	
heteranthera,	Wight.	ex.
Hiptage,	Gartn.	
madablota,	"	
Hiræa,	Jacq.	
indica,	Roxb.	
hirsuta,	Wall.	
Ancistrocladus,	"	
extensus,		
(three other species, Griff.)		

ERYTHROXYLACEAE, Erythroxylys.

Sethia,	Kunth.
indica,	

PORTULACACEAE, Purslanes.

Portulaca,	Lin.	Purslane.
oleracea,	"	Common Purslane.
ပိတ်ပိတ် mya-byet.		
Portulacaria,	Jacq.	
afra,	"	ex.

SILENACEAE, Cloveworts.

Dianthus,	Lin.	Pink.
(several species,)		ex.

ILLECEBRACEAE, Knotworts.

Mollugo,	Lin.	
Spergula,	"	Carpet Weed.
ကုန်ကုန် gya-ga.		
Drymaria,	Willd.	(Species 1)
c		

OCHNACEAE, Ochnads.

Ochna, *Lin.*
 squarrosa, "

SIMARUBACEAE, Quassiads.

Samadera, *Gartn.*
 lucida,
 ကာထယ် *ka-thay.*

RUTACEAE, Rueworts.

Cyminosma, *Gartn.*
 pedunculata, *D C.*

ZYGOPHYLLACEAE, Beancapers.

Tribulus, *Lin.* Caltrops.
 lanuginosus, "

XANTHOXYLACEAE, Prickly Ashworts.

Xanthoxylon, *Lin.*
 toung-than-gyce, တောင်သံကြိုး Mergui Cosme-
 tic wood.

Toddalia, *Juss.*
 ka-theet-hseo, ကာထီဆူး

GERANIACEAE, Cranesbills.

Pelargonium, *L. Herit.* Geranium. (Species?) *ex.*

BALSAMINACEAE, Balsams.

Impatiens, *Lin.* Jewel Weed,
 Touch-me-not. *ex.*
 Balsamina, "

ပန်းချစ်၊ မိုးခွက်၊ pan-phet. dan-da-let.
 fomentosia, *Heyne.*
 reticulata ?

Hydrocera, *Bl.*
 triflora, *Wight.*

OXALIDACEAE, Woodsorrelworts.

Averrhoa.	<i>Lin.</i>	
Carambola,	"	ex.
ကော့ယား zoung-ya.		
Bilimbi,	<i>Lin.</i>	ex.
Biophytum,	<i>D C.</i>	
sensitivum,	"	
Oxalis,	<i>Lin.</i>	Wood-sorrel.
corniculata,	"	

ROSACEAE, Roseworts.

Rosa,	<i>Lin.</i>	Rose.	
		English Rose,	ex.
		China Rose,	"
		Bengal Rose,	"
ခင်းခါး hnen-hsee.*			
rubiginosa,	<i>Lin.</i>	Sweet Briar	ex.
recurva ?	<i>Roxb.</i>		"
Rubus,	<i>Lin.</i>	Briar.	
Gowreephul,	<i>Roxb.</i>		
moluccanus,	<i>Lin.</i>		

POMEAE, Appleworts.

Eriobotrya,	<i>Lindl.</i>		
japonica,	"	Loquat.	ex.
Pyrus,	<i>Lin.</i>	Pear.	(Species !)

AMYGDALAEAE, Almondworts.

Amygdalus,	<i>Lin.</i>		
Persica,	"	Peach.	ex.
Cerasus,	<i>Juss.</i>	Cherry.	(Species !)

LEGUMINOSAE, Leguminous Plants.

Sophora,	<i>Lin.</i>		
tomentosa,	"		ex.

*Applied to all the species.

<i>Crotalaria</i> ,	"	Bengal Flax.	
<i>juncæa</i> ,	"		
ဝံး၊ ဝိက်ဆံ၊	<i>pan. paik-hsan.</i>		
<i>anthylloides</i> ,	<i>Lam.</i>		
<i>retusa</i> ,	<i>Lin.</i>		
<i>verrucosa</i> ,	"		
<i>prostrata</i> ,	<i>Roxb.</i>		
<i>bracteata</i> ,	"		
<i>quinquefolia</i> ,	<i>Lin.</i>		
<i>crassifolia</i> ,	<i>Buch.</i>		
<i>Priotropis</i> ,	<i>Wight.</i>		
<i>cytisoides</i> ,	"		
<i>Melilotus</i> ,	<i>Tournef. Melilot.</i>	(Species ?)	
ဝဲ၊ <i>pai.</i>			
<i>Cyamopis</i> ,	<i>D C.</i>		
<i>psoraloides</i> ,	"	Native Bean.	ex.
ဝဲပုစွန်၊	<i>pai-pa-soon.</i>		
<i>Psoralea</i> ,	<i>Lin.</i>		
<i>corylifolia</i> ,	"		ex.
<i>Indigofera</i> ,	"	Indigo Plant.	
<i>tinctoria</i> ,	"	Common Indigo.	ex.
မဲနယ်၊ မှန်းမဲ၊	<i>mai-nay. shan-mai.</i>		
<i>linifolia</i> ,	<i>Retz.</i>		
<i>enneaphylla</i> ,	<i>Lin.</i>		
<i>viscosa</i> ,	<i>Lam.</i>		
<i>uncinata</i> ,	<i>Roxb.</i>		
<i>trita</i> ,	<i>Lin.</i>		
<i>hirsuta</i> ,	"		
<i>Brunoniana</i> ,	<i>Wall.</i>		
<i>Clitoria</i> ,	<i>Lin.</i>		
<i>ternatea</i> ,	"		ex.
ဝဲနောင်မိုးအောင်မဲလှ၊	<i>oung-mai-phyoo.</i>		
<i>macrophylla</i> ,	<i>Wall.</i>		
<i>Glycine</i> ,	<i>Lin.</i>		
<i>labialis</i> ,	"		

Tephrosia,	<i>Pers.</i>	Hoary Pea.	
<i>coccinea,</i>	<i>Wall.</i>		
<i>purpurea,</i>	<i>D C.</i>		
Sesbania,	<i>Pers.</i>		
<i>egyptiaca,</i>	"		ex.
ရေသူကြီး၊ <i>ya-thoo-gyee.</i>			
<i>aculeata,</i>	<i>Pers.</i>		
Agati,	<i>Rheed.</i>		
<i>grandiflorum,</i>	<i>Desv.</i>		ex.
ပောက်ပန်၊ <i>pouk-ban.</i>			
Æschynomene,	<i>Lin.</i>		
ပေါက်၊ <i>pouk.</i>			
ညှိ၊ <i>nya.</i>			
Uraria,	<i>Desv.</i>		
<i>crinita,</i>	"		
<i>lagopodioides,</i>	<i>D C.</i>		
<i>alopecuroides,</i>	<i>Wight.</i>		
<i>styracifolia,</i>	"		
<i>cordifolia,</i>	<i>Wall.</i>		
<i>campanulata,</i>	"		
<i>retrofracta,</i>	"		
Desmodium,	<i>D C.</i>	Tick Trefoil.	
<i>umbellatum,</i>	"		
<i>cephalotes,</i>	<i>Wall.</i>		
<i>triquetrum,</i>	<i>D C.</i>		
မုတ်ဆိုးလှန်၊ <i>moke-hso-hlan-ma.</i>			
<i>gangeticum,</i>	<i>D C.</i>		
<i>diffusum,</i>	"		
<i>elongatum,</i>	<i>Wall.</i>		
<i>gyrans,</i>	<i>D C.</i>		
<i>polycarpum,</i>	"		
<i>triflorum,</i>	"	• Indian Clover.	
<i>heterophyllum,</i>	"		
<i>reniforme,</i>	"		
<i>auricomum,</i>	<i>Grak.</i>		
<i>biarticulatum,</i>	<i>D C.</i>		
nyan, ညှန်၊			

Dicerma,	<i>D C.</i>	
pulchellum,	"	
Alysicarpus,	<i>Neck.</i>	
monilifer,	<i>D C.</i>	
vaginalis,	"	
styracifolius,	"	
nummularifolius,	"	
Wallichii,	<i>Wight.</i>	
Cicer,	<i>Lin.</i>	Chick Pea.
arietinum,	<i>Grah.</i>	
ကုလာဘ်၊ <i>ku-la-bai.</i>		ex.
Pisum,	<i>Lin.</i>	
sativum,	"	Pea.
Abrus,	"	ex.
precatorius,	"	ex.
ရွေးငယ်၊ ချင်ရွေး၊ <i>rwæ-gnay, khyen-rwæ.</i>		
Rhynchosia,	<i>Lour.</i>	
densiflora,	<i>D C.</i>	
Flemingia,	<i>Roxb.</i>	
stricta,	"	
congesta,	"	
semialata,	"	
linenta,	"	
Chappar,	<i>Buch.</i>	
Phaseolus,	<i>Lin.</i>	
fuscus,	<i>Wall.</i>	
trilobus,	<i>Ait.</i>	
mungo,	<i>Lin.</i>	Gram.
Lathyrus,	"	Vetch. (Species ?)
Soja,	<i>Monch.</i>	
hispida,	"	
Dolichos,	<i>Lin.</i>	
pilosus,	<i>Roxb.</i>	Wild Dolichos.
တောဝဲ၊ <i>tau-bai.</i>		
Lablab,	<i>Adans.</i>	
vulgare,	<i>Savi.</i>	Indian Kidney Bean. ex.
ပဲ၊ <i>pai.</i>		

- Psophocarpus**, *Neck.*
tetragonolobus, *D C.* Chevaux de Frize
 Bean. ex.
 ပဲခြင်းပဲဆောင်းဝါး၊ *pai-myeet, pai-hsoun-wa.*
Canavalia, *D C.*
gladiata, " Sword Bean. ex.
 ပဲနောင်းနီ၊ *pai-noung-nee.*
bracteata, *Wall.*
virosa, *Wight.*
Mucuna, *Adans.*
pruritus, *Hook.* Cow Itch. .
 ခွေးလေး၊ *khwa-læ.*
Cajanus, *D C.*
indicus, *Spreng.* Doll. ex.
 ပဲရင်းချင်း၊ *pai-yen.khyung.*
Erythrina, *Lin.*
indica, *Lam.* Mootchee Wood. .
 ကသင်း၊ *ka-theet.*
 • *toung-ka-theet*, တောင်ကသင်း
seu-pen-lai. (Sgau.)
Butea, *Kon.*
frondosa, *Roxb.* Pulas Kino Tree.
 ပေါက်၊ *pouk.*
superba, " Creeping Butea
 ပေါက်ခွယ်၊ *pouk-may.*
sericophylla, *Wall.* .
 ကု-မျှာင် ? ကမျှာင်
Pongamia, *Lam.*
glabra, *Vent.* Karung.
uliginosa, *D C.*
heterocarpa, *Wall.*
atropurpurea, " Dark-purple Pongamia.
 ကွဲတညည်း၊ *kywai-ta-nyen.*
theet-mee-zoo, သစ်မည်း။

Millettin, Wight.

elliptica,

Dalbergia, Lin.

paniculata, Roxb.

spinosa, "

glauca, Wall.

ဒေါက်တာလောက်၊ *douk-ta-louk.*

myouk-shau, myouk-khyau, မြောက်ရှော့၊ မြောက်

ရှော့၊

theet-hsouk-yo,

သစ်ဆောက်ပိုး။

Pterocarpus, Lin.

Wallichii, Wight.

Gumkino Tree.

Indica, Roxb.

ပတောက်၊ *pa-douk.*

toung-kha-yai, တောင်ခဲ။

Arachis, Lin.

Earth Nut. Pea Nut.

hypogea, "

ex.

မြေပဲ၊ *myæ-bai.*

Guilandina, Juss.

Bonduc, Lin.

ကလိပ်၊ *ka-leing.*

Cæsalpinia, Lin.

Sappan, " Sappan Wood:

တိန်းညက်၊ *teing-nyet.*

mimusoides, Lam.

sepiaria, Roxb. Mysore Thorn.

ဆူးကျစ်ပိုး၊ *hsou-kyan-bo.*

Poinciana, Lin.

pulcherrima, " Barbadoes or Flower Fence,

Peacock's pride, Span

ish Carnation. ex.

ဒေါင်းစုတ်၊ *doung-souk.*

regia, Bojer. Royal Poinciana. ex.

Mezoneurum, Desf.

hymenocarpum, Wight.

Hæmatoxylon,	Lin.		
campechianum,	"	Logwood.	ex.
Parkinsonia,	"	Jerusalem Thorn.	
aculeata,	"		ex.
Jonesia,	Roxb.		
Asoca,	"		
အသောက်ဖို၊	<i>a-thau-ka-pho.</i>		
Tamarindus,	Lin.		
indica,	"	Tamarind Tree.	ex.
မုန့်ကျည်း၊	<i>mag-gee.</i>		
Cathartocarpus,	Pers.	(Cassia. Linn.)	
Fistula,	"	Sweet-fruited Cassia.	
ဂုတြီး၊	<i>gnu-gyce.</i>		
nodosus,	Voigt.	Knotted Cassia.	
ဂုသိန်၊	<i>gnu-theing.</i>		
Pterolobium,	Brown.		
lacerans,	"		
Cassia,	Lin.	Senna.	
Sophora,	"		
alata,	"	Winged Cassia.	
မေလိကြီး၊	<i>mai-za-lee-gyee.</i>		
obtusa,	Roxb.		
florida.	Vahl.	Flowery Cassia.	ex.
မေလိ၊	<i>mai-sa-lee.</i>		
glauca,	Lam.		ex.
suffruticosa,	Kon.		
occidentalis,	Lin.	Western Cassia.	
ကလော၊	<i>ku-lau.</i>		
Tora,	Lin.	Fæted Cassia.	
ဒန်ကျွဲ၊	<i>dan-kywai.</i>		
Wallichiana,	D C.		
angustissima,	Lin.		
palmata,	Wall.		
tau-mung-hsee,	တောမုန့်သီး၊		

- Cassia,**
 pee-tha-kha-hseu-pee-o, (Sgau.)
 " " " bau, "
- Cynometra,** Lin.
 cauliflora, " ex.
 "acacisides, Griff.
- Hymenæa,** Lin.
 Courbaril, " American Gum-anime Tree. ex.
- Bauhinia,** "
 malabarica, Roxb.
 acuminata, Lin. White Bauhinia. ex.
 မဟာလွေကားဝါ ma-ha-hlæ-ga-phyoo.
 tomentosa, Lin. Yellow Bauhinia. ex.
 မဟာလွေကားဝါ ma-ha-hlæ-ga-wa.
 variegata, Lin. Purple Bauhinia. ex.
 purpurea, "
 မဟာလွေကားနီ ma-ha-hlæ-ga-ncc.
 scandens, Lin. Esculapian-rod Bauhinia.
 မြောက်လွေကား myouk-hlæ-ga.
 diphylla, Buch.
 ပလံ pa-lan. "
 brachycarpa, Wall.
 polycarpa, "
 nway-pa-lan, နွယ်ပလံ Creeping Bauhinia.
 sheen-byat, ရှည်ပွတ်
 myouk-kha-pat, မြောက်ခါပတ်
 mai-kai-so-ka-pæ. (Sgau.)
- Entada,** Adans.
 Pursætha, D C.
 ကုန်ညင်း kung-nyen.
- Mimosa,** Lin. Sensitive Plant.
 pudica, "
 ထိကာရုမ်း hte-ka-yung. ex.

- Inga**, *Plum.*
 xylocarpa, *D C.* Iron-wood Tree.
 ပုင်ကဝိုင်း *pyen-ka-do.*
 bigemina, *Willd.*
 တညင်း *ta-nyen.*
- Caillea**, *Guillem.*
 cinerea, "
Adenanthera, *Lin.*
 pavonina, "
 ရွေးကြီး *rwæ-gyee.*
- Acacia**, *Neck.* Acacia.
 Catechu, *Willd.*
 ရှား *sha.*
 stipulata, *D C.*
 ခင်း *sect.?*
 odoratissima, *Will.*
 elata, *Grah.*
 Sirissa, *Buch.*
 pennata, *Willd.*
 rugata, *Buch.*
 ken-bwon ကင်ဝွန်း
 kuk-ko.* ကုတ်ကို
 popeeah, *Wall.*
 nway-khyo, နွယ်ချို Spurious Liquorice.
- Vachellia**, *Wight.*
 Farnesiana, " Gum Arabic Tree. ex.
 နန်းလင်းပိုင်၊ နန်းလင်းကျိုင် *nan-lung-kyeing.*
- Leguminosæ**,
 pai-lwon, ပဲလွင်း
 " kyet-oo, " ကျက်ဥ
 " than-ta, " သံတာ

*Since page 206 was printed off, I have seen this tree in flower and find it a species of acacia, and not a dalbergia.

Leguminosae,

" bya,	" ပြာ၊
" nai-tha,	" နိသာ၊
" nouk,	" နောက်၊
" be-sat,	" ဘီးစပ်၊
myouk-pai,	မြောက်ပဲ၊
tau-khn-yai,	တာခရဲ၊
kyoung-gyet,	ကျောင်ကျက်၊
plau-mu,	
tha-na,	
tau-hee,	

(S'gau.)

“
“

CONNARACEAE, Connarads.

Connarus,	Lin.
monocarpus,	"
doke-ka-det ?	ခုတ်ကတတ်၊
khwa-touk	ခွေးတောက်၊
Rourea,	Aubl.
Sookurthoontee,	Voigt.
တလီတိ၊	ta-lee-te.

CRASSULACEA, House-leeks.

Sempervivum,	House-leek.
tectorum,	
ရွက်ကျပ်ပေါက်၊	ywet-kya-pen-pouk.
Kalanchoe,	Adans.
teretifolia,	Wall.
Bryophyllum,	Salisb.
calcecinum,	"
ရွက်ကျပ်ပေါက်၊	ywet-kya-pen-pouk.

ex. •

ANACARDIACEAE, Terebinths.

- *Anacardium*, *Rottb.*
occidentale, *Lin.* Cashew Nut.
 သီဟိုဠ်သရက်၊ *thee-ho-tha-yet.* ex.
thubbambu, *Wall.*
Semecarpus, *Lin.*
humilis, *Wall.*
Holigarna, *Roxb.*
longifolia, "
 ရှစ်ချေး၊ *sheet-khya?*
Mangifera, *Lin.* Mango Tree.
indica, "
sylvatica, *Roxb.*
 သရက်၊ *tha-yet.*
foetida, *Lour.* Horse Mango.
 လဝွတ်၊ *la-mwot.*
Cambessedea, *Wight.*
oppositifolia, " Opposite-leaved Mango.
 မရန်း၊ *ma-yan.*
Buchanania, *Roxb.*
latifolia, "
Melanorrhæa, *Wall.* Varnish Tree.
usitatissima, "
 သစ်ခေး၊ *theet-sæ.*
glabra, *Wall.*
visitata, "
 သစ်ခေးရိုင်း၊ *theet-sæ-yaing.*
Rhus, *Lin.* Sumach.
paniculata, *Wall.*
Odina, *Roxb.*
Wodier, "
 နံဝဲ၊ *hnan-bai.*
Syndesmis, *Wall.* Red-wood.
tavoyana, "
 ချေး၊ *khyæ.*
 d

Swintonia,	<i>Griff.</i>	(Species ?)
Spondius,	<i>Lin.</i>	
mangifera,	<i>Pers.</i>	Hogplum.
ကျွန်း ကျွန်း	<i>kywae.</i>	

QUERCACEAE, Mastworts.

Castanea,	<i>Tournef.</i>	Chestnut.
martabanica,	<i>Wall.</i>	
သစ်ချ	<i>thect-khya.</i>	
tribuloides,		
ဝက်သစ်ချ	<i>wet-thect-khya.</i>	
Quercus,	<i>Lin.</i>	Oak.
fenestrata,	<i>Roxb.</i>	
turbinata,	"	
velutina,	<i>Wall.</i>	
သပိတ်	<i>tha-beik.</i>	
amherstianus,	<i>Wall.</i>	
Tirbbæ,	"	
thæ-ghau,		(Sgau.)
" wa,		"
" tee,		"
Quercaceæ,		
thæ-læ-nau,		(Sgau.)
" " ka-seu,		"

SCEPACEAE, Scepadis.

Scepa,	<i>Lindl.</i>
villosa,	<i>Lin.</i>

URTICACEAE, Nettleworts.

Urtica,	<i>Lin.</i>	Nettle,
heterophylla,	<i>Roxb.</i>	
ဇက်ယာ	<i>bet-ya.</i>	
Niven,	<i>Lin.</i>	Nettle-hemp. ex.
ဂွံ	<i>goon.</i>	
Bohmeria,	<i>Jacq.</i>	
interrupta,	<i>Willd.</i>	Nettle.
ကျက်ဇက်ယာ	<i>kyet-bet-ya.</i>	

Cannabis,	Lin.	Hemp.	
sativa,	"	Bang Plant.	ex.
ဆင်း <i>ben.</i>			
Morus,	"	Mulberry.	
atropurpurea,	Roxb.		ex.
ပိုးစာ <i>po-sa.</i>			
Ficus,	Lin.	Fig.	
Carica,	"	Common Fig.	ex,
elastica,	Roxb.	India-rubber Tree.	ex.
religiosa,	Lin.	Aspen-leaved Peepul.	
ညောင်ဗောဓိ <i>nyoung-bau-de.</i>			
cordifolia,		Heart-leaved Fig.	
ညောင်ကျတ် <i>nyoung-gyat.</i>			
Benjaminoides,	F. M.	Tenasserim Banyan.	
ညောင်ချေထောက်၊ ညောင်အုပ်၊	<i>nyoung-ung.</i>		
Dæmonam,	Kon.		
ရေအုပ်၊	<i>yae-kha-ung.</i>		
Roxburghii,	Wall.		
Cunila,	Buch.		
nyoung-tha-byæ,	ညောင်သပြေ၊		
nyoung-peing-nai,	ညောင်ပိန်းနဲ၊		
bet-ka-lat,	ထက်ကလပ်၊		
kha-ung-sung-koo,	အုပ်စုင်ကူး၊		
dauk-let,	ဒေါက်လတ်၊		
sa-kha-ung,	စာအုပ်၊		
thubboo,	Wall.		
thuppan,	"		
we-tha-kau-tho,		(Sgau.)	
" " " hsa,		"	
" " koo-pan,		"	
" " " " tho,		"	
" " " " hsa,		"	
" ta-eu-na-tho,		"	
" " " " hsa,		"	
" htee,		"	

Ficus,			(Sgau.)
tha-dwee-tho,			"
khai-hsa,			"
kle-thoo-mu,			"
Artocarpus,	<i>Lin.</i>		
integrifolius,	"	Jack Tree.	ex.
မိန့်နဲး peing-nai.			
Lacoocha,	<i>Roxb.</i>		
မြောက်လုပ် myouk-loke.			ex.
echinatus,	<i>Roxb.</i>		
တောင်မိန့်နဲး toun-geing-nai.			
hirsutus,	<i>Roxb.</i>		
incisus,	<i>Lin.</i>	Bread Nut.	ex.
communis,	<i>Forst.</i>	Bread Fruit.	
myouk-loke-gyee,		မြောက်လုပ်ကြီး	
myouk-loke-gnay,		မြောက်လုပ်ငယ်	
Phytocrene,	<i>Wall.</i>	Water Vine.	
gigantea,	"		
Urticaceæ,			
bel-ya,		တက်ယာ	
nway-bet-ya,		နွယ်တက်ယာ	
Urticea procera ?	<i>Griff,</i>		

JUGLANDACEAE, Juglands.

Juglans,	<i>Lin.</i>	Walnut.
arguta,	<i>Wall.</i>	
သစ်ကြံ theet-kya.		
Engelhardtia,	<i>Leschen.</i>	
Roxburghiana,	<i>Lindl.</i>	

CASUARINACEAE, Beefwoods.

Casuarina,	<i>Lin.</i>	Beef Wood Tree.
muricata,	<i>Roxb.</i>	
ထင်းခူး hten-roo.		
lateriflora,		ex.

PIPERACEAE, Pepperworts.

Piper.

nigrum,	Lin.	Black Pepper.	
ငရုပ်ကောင်း၊	<i>nya-yoke-koun.</i>		ex.
longum,	Lin.	Long Pepper.	"
ပိတ်ရှင်း၊	<i>peik-khyen.</i>		
Betle,	Lin.	Betle Leaf.	"
ကွပ်ရွတ်၊	<i>kwon-rwet.</i>		
ribesiodes,	Wall.	Wild Betle Leaf.	
တောကွပ်၊	<i>tau-kwon.</i>		

SALICACEAE, Willowworts.

Salix,	Lin.	Willow.	
babylonica,	"	Weeping Willow.	ex.
mo-ma-kha	မိမိမာ		

ALTINGIACEAE, Liquidambar.

Liquidambar,	Lin.		
Altingia,		Liquid Storax Tree.	
နနိတရတ်၊	<i>nan-ta-yake.</i>		

SANTALACEAE, Sandalworts.

Santalum,	Lin.	Sandal Wood Tree.	
album,	"		
စန္ဒကု၊	<i>san-da-koo.</i>		
ka-ra-mai,	ကရမိ၊		
Osyris,	Lin.		
peltata,	"		
Phaoun	Wall.		

ELÆAGNACEAE, Oleasters.

Elæagnus,	Lin.	Wild Olive.	
conferta,	Roxb.	Oleaster.	
မင်ဂု၊	<i>men-gu.</i>		

THYMELACEAE, Daphnads.

Daphne, Lin.

ဆေးလေး *hsae-lae.*

Cansjera, (Species.)

AQUILARIACEAE, Aquilariads.

Aquilaria, Lin. Lign-aloes.

a-kyau, အကျော့၊ Aloes Wood,

PROTEACEAE, Proteads.

Helicia, Lour.

excelsa, Brown.

glabrata, "

LAURACEAE, Laurels.

Cinnamomum, Burm.

iners, Reinw.

သစ်ကျွန်းပိုး၊ *theet-kyam-bo.*

Ocotea, Aubl.

mollis, Wall.

Persea, Gartn.

grandis, Nees.

Laurus, Lin.

pan-na-tha, ပန်းနာသာ၊

ka-rwae, ကရွေး၊ Martaban Camphor Wood.

kyai-zai, ကျဲဇဲ၊

kyai-zai-khyae, ကျဲဇဲကျဲချေ၊

hman-then, မှန်သင်း၊ Sassafras.

ung-tung, အုပ်တုပ်၊

thuggoo, Wall.

kheemna, "

ka-thee-wæ-ka-thee-nau.

(Sgau.)

" " " sa-bau-kæ.

CASSYTHACEAE, Dodder-laurels.

Cassyta, Lin.

filiformis, "

- ARISTOLOCHIACEAE, Birthworts.

Aristolochia,	Lin.
acuminata,	Lam.

AMARANTACEAE, Amarants.

Digera,	Forsk.	
muricata,	Mart.	
Deeringia,	Brown.	
indica,	Spreng.	
Amarantus,	Lin.	
tristis,	"	ex.
oleraceus.	"	Nepaul Spinage. "
ဟင်းကနွယ်။	hen-ka-mway.	
spinous,	Lin.	Spinous Amarantus.
ဟင်းကနွယ်။	hen-ka-mway.	
Æruea,	Forsk.	
Monsonia,	Mart.	
scandens,	"	
brachiata,	"	
lanata,		ex.
javanica,	Juss.	"
Celosia,	Lin.	Cockscomb,
argentea,	"	
cristata,	"	
ကျက်မောက်။	kyet-mouk.	
kyet-yet,	ကျက်ရက်။	Prince's Feather
Gomphrena,	Lin.	Globe-amarant,
globosa,	"	ex.
မညိုပန်း။	ma-hnyo-ban.	
Alternanthera,	Forsk.	
sessilis,	Brown.	
Achyranthes,	Lin.	
aspera,	"	
Desmochaeta,	D C.	
velutina,	Wall.	
Centrostachys,	"	
aquatica,	"	

CHENOPODIACEAE, Goosefootworts.

- Basella,
 alba, Lin. Malabar Nightshade. ex.
 ဂျင်ဘိုင် gyen-baing.

TETRAGONIACEAE, Aizoons.

- Sesuvium, Lin.
 repens, Rottl.

PHYTOLACCACEAE, Virginian Pokeworts.

- Gisekia, Lin.
 pharnaceoides, "

POLYGONACEAE, Buckwheats.

- Polygonum, Lin.
 tomentosum, Willd.
 barbatum, Lin.
 glabrum, Willd.
 Ampelygonum, Lindl.
 chinense, "
 Rumex, Lin. Dock.
 vesicarius, ? " Country Sorrel.

NYCTAGINACEAE, Nyctagos.

- Mirabilis, Lin. Marvel of Peru.
 Jalapa, " Four O'clock. ex.
 Kermesina, Crimson flowered variety.
 " alba " white " "
 Alba, White " "
 Flava, Yellow " "
 " alba Yellow-white " "

မည်ခည် မည်ရ မြေ myae-zu.

- Boerhaavia, Lin.
 erecta, "
 repanda, Willd. ex.

MENISPERMACEAE, Moonseedworts.

- Anamirta, Colebr.
 Cocculus, Wight.

Cocculus, *Bauh.*
acuminatus, *D C.*
villosus, "

VACCINIACEAE, Bilberryworts.

Thibaudia, *Pav.*
loranthiflora, *Wall.*

MYRSINACEAE, Ardesiads,

Ægiceras, *Gart.*
fragrans, *Kon.*

ဘူတရတ်: *boo-ta-yat.*

Ardesia, *Swz.*
humilis, *Vahl.*
amherstiana, *Wall.*

ကျက်မအုတ်: *kyet-ma-oke.*

læ-kho-mau-thoo, (Sgau.)

" " " *ghau,* "

" " " *wa,* "

" " " *pha-do,* "

Embelia, *Juss.*

Ribes, *Burm.*

villosa, *Wall.*

glandulifera, *Wight.*

Maesa, *Forsk.*

ramentacea, *Wall.*

lanceolata, *Voigt.*

SAPOTACEAE, Sappotads.

Achras, *Lin.*

Sapota, " *Sapodilla Plum, Bully-
 Tree. ex.*

Chrysophyllum, "

Cainito, " *Star-apple. ex.*

Mimusops, "

Elengi, " *ex.*

ခရီးခရုတ်: *kha-ya, kha-ya-gung.*

Kauki, *Lin. ex.*

thubbæ, *Wall.*

E

Bassia,	<i>Kon.</i>	
longifolia,	<i>Lin.</i>	Illiepie Oil Tree.
ကံစေ့၊	<i>kan-zau.</i>	
Sideroxylon,	<i>Lin.</i>	
regium,	<i>Wall.</i>	
Sapotacæ,		
palæpean,	“	

DIOSPYRACEAE, Ebenads.

Diospyros,	<i>Lin.</i>		
kaki	“	: Chinese Date.	ex.
တယ်တည်၊	<i>tay, tee.</i>		
mollis,	<i>Griff.</i>	Shan Black Dye.	
heterophylla,	<i>Wall.</i>		
yen-daik,	ရင်းတိုက်၊		
tau-buke,	တောမုတ်၊		
pen-lay-buke,	ပင်လယ်မုတ်၊		
ryamucha,	<i>Wall.</i>		

STYRACEAE, Storaxworts.

Symplocos,	<i>Lin.</i>		
kunneen,	<i>Wall.</i>		
kain-tha-phogee,	“		
keunla,	“		
touk-yat,	တောက်ရပ်၊		..
Styrax,	<i>Lin.</i>		
Benzoin, ?	<i>Dryand.</i>		

ILICIACEAE, Hollyworts.

Ilex,	<i>Lin.</i>	(species ?)
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NOLANACEAE, Nolanads.

Dichondra,		
repens,	<i>Forst.</i>	

CUSCUTACEAE, Dodders.

Cuscuta,	<i>Lin.</i>	Dodder.
<i>sulcata,</i>	<i>Rorb.</i>	

CONVOLVULACEAE, Bindweeds.

Convolvulus,	<i>Lin.</i>		
<i>dissectus,</i>	"	Noyau Plant.	ex.
<i>parviflorus</i>	<i>Vahl.</i>		
Rivea,	<i>Choisy.</i>		
<i>tiliæfolia,</i>	"		
<i>obtecta,</i>	"		
Argyreia,	<i>Lour.</i>	Silver Weed.	
<i>laurifolia,</i>	<i>Voigt.</i>		
<i>Wallichii,</i>	<i>Choisy.</i>		
<i>capitata,</i>	"		
မြတ်နိုး၊ <i>nway-nee.</i>			
<i>aggregata,</i>	<i>Choisy.</i>		
<i>pallida,</i>	"		
<i>tomentosa,</i>	"		
<i>barbigera,</i>	"		
<i>rubicunda,</i>	"		
Quamoclit,	<i>Tournef.</i>		
<i>pennatum;</i>	<i>Voigt.</i>	China Creeper, Jasmin	
		Rouge, or Dwarf	
		Bean.	ex.
မြတ်နိုး၊ <i>myat-læ-nee.</i>			
Batatas,	<i>Rumph.</i>		
<i>edulis,</i>	<i>Choisy.</i>	Sweet Potatoe.	ex.
ကစွန်း၊ သဘာဝမြောက်၊ <i>ka-zwon.</i>			
<i>paniculata,</i>	<i>Choisy.</i>		
Pharbitis,	"		
<i>Nil ?</i>	"		
Calonyction,	"		
<i>speciosum,</i>	"	Moön Flower.	ex.
<i>Roxburghii.</i>	<i>G. Don.</i>		
မြတ်ကစွန်းအဖြူ၊ <i>nway-ka-zwon-a-phyoo.</i>			

Ipomæa,	<i>Lin.</i>	
Pes capræ,	<i>Sweet.</i>	Goat-footed Ipomæ.
ပင်လယ်ကွက်	<i>pen-lay-ka-zoon.</i>	
gangetica,	<i>Voigt.</i>	
tridentata,	<i>Roth.</i>	
filiformis,	<i>Voigt.</i>	
Turpethum,	<i>Brown.</i>	
straminea,	<i>Wall.</i>	
pileata,	<i>Roxb.</i>	Bonnet Ipomæ.
barbata,	<i>Choisy.</i>	
hispida,	<i>Voigt.</i>	
striata,	<i>Pers.</i>	
obscura,	<i>Ker.</i>	
dentata.	<i>Willd.</i>	
heptaphylla,	<i>Voigt.</i>	
Pes tigridis,	<i>Lin.</i>	Tiger-footed Ipomæ.
petaloidea,	<i>Choisy.</i>	
oo-men, ဥမင်		
Hewittia,	<i>Wight.</i>	
bicolor,	"	
Skinneria,	<i>Choisy.</i>	
cæspitosa,	"	
Porana,	<i>Burm.</i>	
paniculata,	<i>Roxb.</i>	
Breweria,	<i>Brown.</i>	
Roxburghii,	<i>Choisy.</i>	
elegans,	"	
Evolvulus,	<i>Lin.</i>	
alsinoides,	"	
Lepisternon,		
flavesens,		
Blinkworthia,	<i>Choisy.</i>	
lycioides,		
Neuropektis,	<i>Wall.</i>	
ovata,	"	
Lettsomia,	<i>Roxb.</i>	
setosa,	"	

HYDROLEACEAE, Hydrophyls.

Hydrolea,	<i>Lin.</i>
zeylanica,	<i>Vahl.</i>

LOBELIACEAE, Lobeliads.

Lobelia,	<i>Lin.</i>	
triangulata,	<i>Roxb.</i>	
succulenta,	<i>Blume.</i>	Neilgherry Grass. ex.

CAMPANULACEAE, Bellworts.

Cephalostigma,	<i>A. D C.</i>	
paniculatum,	"	
Codonopsis,	<i>Wall.</i>	
truncata,	"	
Campanula,	<i>Lin.</i>	(Species !)
Pongatium,	<i>Juss.</i>	
indicum,	<i>Lam.</i>	

CINCHONACEAE, Coffeeworts.

Nandea,	<i>Lin.</i>	
Cadamba,	<i>Roxb.</i>	
ထိန်၊ ခရု၊ မာ-ဝေ.		
cordifolia,	<i>Roxb.</i>	
Hymenodictyon,	<i>Wall.</i>	
thyrsiflorum,	"	
Mussaenda,	<i>Lin.</i>	
Wallichii,	<i>G. Don.</i>	
Gardenia,	<i>Ellis.</i>	
florida,	<i>Lin.</i>	Cape Jasmine. ex.
သုင်ဆင့်ပန်း thung-hsen-ban.		
coronaria,	<i>Buch.</i>	Garland Gardenia.
ရင်ခတ်၊ yen-khat.		
macrocarpa,	<i>Carey.</i>	ex.
enneandra,	<i>Kon.</i>	
lucida,	<i>Roxb.</i>	ex.
obtusifolia,	"	
kyet-tet, ကျက်တက်၊		

e

Randia,	<i>Houst.</i>	
<i>dumetorum,</i>	<i>Lam.</i>	
<i>cuneata,</i>	<i>Wall.</i>	(Other species.)
Dentella,	<i>Forst.</i>	
<i>repens,</i>	<i>Roxb.</i>	
Hedyotis,	<i>Lin.</i>	
<i>racemosa,</i>	<i>Lam.</i>	
<i>Burmanniana,</i>	<i>Brown.</i>	
<i>ramosa,</i>	"	
Hamelia,	<i>Jacq.</i>	
<i>patens,</i>	"	ex.
Morinda,	<i>Vaill.</i>	
<i>citrifolia,</i>	<i>Lin.</i>	ex.
ညောင်ကြီး၊ <i>nyau-gyee.</i>		
<i>exserta,</i>	<i>Roxb.</i>	
ညောင်၊ <i>nyau.</i>		
<i>persicifolia,</i>	<i>Buch.</i>	
<i>yai-yo,</i> ယဲယို၊		
<i>nyau-hwee,</i> ညောင်ဖျိ၊		
Pæderia,	<i>Lin.</i>	
<i>foetida,</i>	"	
<i>lanuginosa,</i>	<i>Wall.</i>	
Chiococca,	<i>P. Browne.</i>	
<i>racemosa,</i>	<i>Jacq.</i>	ex.
Ixora,	<i>Lin.</i>	
<i>coccinea,</i>	"	Crimson Ixora. ex.
ပန်စရိတ်၊ <i>pan-sa-yeik.</i>		
<i>parviflora,</i>	<i>Vahl.</i>	ex.
<i>pallens,</i>	<i>Wall.</i>	Wild Ixora.
<i>alba,</i>	"	
Pavetta,	<i>Lin.</i>	
<i>tomentosa,</i>	<i>Sm.</i>	
Coffea,	<i>Lin.</i>	
<i>arabica,</i>	"	ex.
Psychotria,	"	(Species?)
Axanthes,	<i>Wight.</i>	
<i>longifolia,</i>	"	

Spermacoce, *Lin.*
 articularis, "
Coffeaceæ, *D C.*
 kyet-tet. ကျက်တတ်။

Cinchonaceæ,
 hsouk, ဆောက်။
 kyet-yung, ကျက်ရမ်း။
 yæ-lung-khyan-tha, ရေလုံချင်သာ။
 thæ-a-dæ, (Sgau.)
 ka-thee-tu-sau "

CAPRIFOLIACEAE, Honeysuckleworts.

Lonicera, *Lin.* Honeysuckle.
 japonica, *Thunb.* ex.
Viburnum, *Lin.*
 ætidum, *Wall.*

GALIACEAE, Maddeworts.

Rubia, *Tournef.*
 cordifolia, *Lin.*

COMPOSITAE, Daisyworts.

Veronia, *Schreb.*
 teres, *D C.*
 aspera, "
 blanda, "
 attenuata, "
 calycina, "
 elæniifolia, "
 multiflora, *Less.*
Decaneurum, *D C.*
 grande, "
 divergens, "
 Centrantherum, *Cass.*
 intermedium. *Less.* ex.
Cyanopis, *Blume.*
 pubescens, *D C.*

Elephantopus,	<i>Lin.</i>	
scaber,	<i>D C.</i>	
Ageratum,	<i>Lin.</i>	
conyzoides,	<i>D C.</i>	
Eupatorium,	<i>Tournef.</i>	
Burmanicum,	<i>D C.</i>	
Astor,	<i>Lin.</i>	Starwort, or Christmas- daisy. (Species ?) ex.
Anthroisma,		
lacinatum,	<i>D C.</i>	
Sphæranthus,	<i>Vaill.</i>	
microcephalus,		
Cyathocline,		(Species ?)
Microgloss,	<i>D C.</i>	
sessiliflora,		ex.
Conyza,	<i>Lin.</i>	
semipinnatifida,	<i>D C.</i>	
striata,	"	
Blumea,	"	
Wightiana,	"	
lactucæfolia,	"	
flava,	"	
lapsauoides,	"	
hymenophylla,	"	
napifolia,	"	
membranaceæ,	"	
visculosa,	"	
cuneifolia,	"	
holosericea,	"	
fasciculata,	"	
glomerata,	"	
spinelliosa,	"	
oxyodonta,	"	
aurita,	"	
grandis,	"	Camphor Plant.
ပုဏ္ဏားပင်၊	<i>pung-ma-theing.</i>	
Pluchea,	<i>Cass.</i>	
indica,	<i>Less.</i>	
foliosa,		

Monenteles, <i>spicatus,</i>	Labil.		
Epaltes, <i>linearifolia,</i> <i>littoralis, ?</i>	Cass.		
Inula, <i>polygonata,</i> <i>oblonga,</i>	Lin.		
Dahlia,	Cav.	(Species ?)	ex.
Wollastonia, <i>biflora,</i> <i>scabriuscula,</i>	D C.		
Coreopsis,	Lin.	(Species ?)	ex.
Helianthus,	"	Sunflower. (Species ?)	ex.
Bidens, <i>Wallichii,</i>	"		
Spilanthes, <i>acmella,</i> မိမိလင်းကလာ <i>hen-ka-la.</i> <i>paniculata,</i>	Jacq.		ex.
Pyrethrum, <i>indicum,</i> <i>sinense ?</i>	Gartn.	Feverfew. Chrysanthemum.	ex.
Chrysanthemum, <i>foeniculaceum,</i>	Lin.		ex.
Artemesia,	"	Wormwood.	
Abrotanum,	"	Southernwood.	ex.
Gnaphalium, <i>indicum,</i>	"	Everlasting.	
Gynura, <i>nepalensis,</i> <i>bicolor,</i>	Cass.		ex.
Senecio,	Lin.	(Species ?)	
Notonia, <i>crassissima,</i>	D C.		
Aplotaxis, <i>carthamoides,</i>	"		

Calendula,	Lin.		
officinalis,	"	Common Marygold.	ex.
ငါးတရာ	htat-ta-ya.		
Carthamus,	Tournef.		
tinctorius,	Lin.	Safflower.	ex.
ဆူး	hsuo.		
Lactuca,	Tournef.		
sativa,	Lin.	Lettuce.	ex.
Sonchus,	"	(Species ?)	

DIPSACEAE, Teazelworts.

Dipsacus,	(Species ?)
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PLUMBAGINACEAE, Leadworts.

Plumbago,	Lin.		
rosea,	"	Flower red.	ex.
ငါးချပ်နီ	ken-khyoke-nce.		
zeylanica,	Lin.	Flower white.	"
ငါးချပ်ပြာ	ken-khyoke-phyoo.		
capensis,	Thunb.	Flower blue.	"
Ægialitis,	Brown.		
rotundifolia,	Roxb.		

CORDIACEAE, Sebestens.

Cordia,	Lin.	
Myxa,	"	
သနတ်	tha-nat.	

BORAGINACEAE, Borageworts.

Trichodesma,	Brown.	
indicum,	"	
perfoliatum,	Wall.	
Heliotropium,	Tournef.	
peruvianum,	Lin.	ex.
brevifolium,	Wall.	
Tournefortia,	Lin.	
ovata,	Wall.	

Ehretia, Lin.
 yen-yai-myauk-mye, ခင်ရဲမြောင်မြောင်

LABIATAE, Mintworts.

Ocimum, Lin. Basil.
 Basilicum, " ex.
 sanctum, " Holy Basil. "
 မင်းခင်း, pen-zeing. hlung.
 canum, Bentham.
Acrocephalus, Bent.
 capitatus, "
Moschosma, Reichb.
 polystachya, "
Orthosiphon, Bent.
 rubicundus, "
 stamieus, "
 roseum, "
 incurvus, " ex.
Plectranthus, L' Her.
 coetsa, D. Don.
 ternifolius, "
Anisochilus, Wall.
 carnosus, "
 pallidum, "
Pogostemon, Desf.
 paniculatum, Bent.
Dysophylla, Blume.
 auricularia, Bl.
 quadrifolia, Bent.
Elsholtzia, Wild.
 blanda, Benth.
 incisa, "
Perilla, Lin.
 ocymoides, "
Mentha, " Mint. ex.
 sylvestris, "
 ဘူဒီနီ, boo-dee-na.

Salvia,	Lin.		
officinalis,	"	Sage.	ex.
splendens,	Sello.		"
Scutellaria,	Lin.		
incurva,	Wall.		
discolor,	Colebr.		"
Leucas,	Brown.		
ovata,	Benth.		
teres,	"		
strigosa,	"		
pilosa,	"		
flaccidia,	Brown.		
martinicensis,	"		
zeylanica,	"		
nutans,	Spreng.		
dimidiata,	"		
Leonotis,	Brown.		
Leonurus,	"		
Holmskioldia,	Retz.		
sanguinea,	"		ex.
Colquhounia,	Wall.		
elegans,	"		
Gomphostemma,	"		
strobilinum,	"		
viride,	"		
oblongum,	"		
lucidum,	"		
crinitum.	"		
melissæfolium,	"		ex.
Teucrium,	Lin.		
stoloniferum,	Buch.		
quadrifarium,			
Ajuga,	Lin.		
macrocarpa,			
Anisomeles,	Brown.		
ovata,	"		
malabarica,	"		
candicans,	Benth.		

Cymaria, *Benth.*
 dichotoma, "
 elongata, "

Labiatae,

soo-la-na-pa, ဓူလာနာပါ
 phau-ka-bo, (Sgau.)
 hau-wau-thwæ, "
 klo-ma-nee, "
 phau-lai-thwai, "
 hau-phgee, "

VERBENACEÆ, Vervains.

Clerodendron, *Lin.* Clerodendron.
 squamatum,* *Vahl.* Scarlet, " ex.
 ဗူဂျီနီ bu-gyee-nee.
 neriifolium, *Wall.* ex.
 nutans, "
 ငရဲပတူ ngo-yan-pa-too.
 roseum, "
 siphonanthus, *Brown.*
 inerme, *Gartn.*
 serrata,
 urticæfolium,
 fragrans, *Vent.* Fragrant Clerodendron.
 viscosum, "
 ဗူဂျီနီ bu-gyee-phyoo.
 hnen-eik, နှင်းဒိပ် Double Flowered, "
Callicarpa, *Lin.*
 arborea, *Roxb.*
 lanceolaria, "
 macrophylla, "
Vitex, *Lin.* Chaste Tree.
 trifolia, " ex.
 ကြောင့်ပန်း kyoung-ban.
 arborea, *Roxb.*
 ထောက်ရှာ htouk-sha.

*This may be Wallich's roseum of which I have no description.

<i>Congea</i> ,	<i>Roxb.</i>	
<i>azurea</i> ,	<i>Wall.</i>	
<i>tomentosa</i> ,	<i>Wight.</i>	
<i>velutina</i> ,	"	
ကလေးကလေး <i>ku-yau.</i>		
<i>Gmelina</i> ,	<i>Lin.</i>	
<i>arborea</i> ,	<i>Roxb.</i>	
• <i>Tectona</i> ,	<i>Lin.</i>	Teak.
<i>grandis</i> ,	"	
ကျွန်း <i>kywon.</i>		
<i>ternifolia</i> ,	<i>Buch.</i>	
တလတတ်၊ တတတ်၊ <i>ta-hat.</i>		
<i>Streptium</i> ,	<i>Roxb.</i>	
<i>asperum</i> ,	"	
<i>Verbena</i> ,	<i>Lin.</i>	
<i>officinalis</i> ,	"	Common Vervain. ex.
<i>bonariensis</i> ,	"	"
<i>Aloysia</i> ,	<i>Ort.</i>	
<i>citriodora</i> ?	"	"
<i>Stachytarpheta</i> ,	<i>Vahl.</i>	
<i>mutabilis</i> ,	"	"
<i>urticæfolia</i> ,	<i>Sims.</i>	
<i>Lantana</i> ,	<i>Lin.</i>	
<i>nivea</i> ,	<i>Vent.</i>	Changable Lantana.
<i>odorata</i> ,	<i>Lin.</i>	ex.
<i>alba</i> ,	"	
<i>aculeata</i> ,	"	
<i>Hymenopyramis</i> ,	<i>Wall.</i>	
<i>brachiata</i> ,	"	
<i>Avicennia</i> ,	<i>Lin.</i>	
<i>tomentosa</i> ,	"	
<i>Glossocarya</i> ,	<i>Wall.</i>	
<i>mollis</i> ,	"	

MYOPORACEAE, Myoporads.

<i>Myoporum</i> ,	<i>Banks.</i>	
<i>acuminatum</i> ,	<i>Brown.</i>	ex.

PEDALIACEAE, Oil-seedworts.

- Sesamum**, *Lin.*
indicum, "
 ex.
 မုန့်: *hnan.*
hnan-ma, မုန့်:မ

BIGNONIACEAE, Trumpet-flowerworts.

- Biguonia**, *Tournef.*
adenophylla, *Wall.*
fimbriata, "
 • *suberosa*, *Roxb.*
crispa,
 သံသင်: *than-theet.*
thuggainee, "
lain-bha, "
khwai-tha, (Sgau.)
Spathodea, *Beauv.*
stipulata, *Wall.* Stipuled Trumpet
 Flower.
 ဆက်သင်: *bet-than.*
serrulata, *Wall.*
Tecoma, *Juss.*
jasminoides, *G. Don.* ex.
Calosanthès, *Bl.*
indica, " • Indian Trumpet Flower.
 ကျောင်ရှာ: *kyoung-sha.*
Bignoniaceæ.
kyoung-sha-touk, ကျောင်ရှာတောက်:

CYRTANDRACEAE, Gesnerworts.

- Æschynanthus**, *Jack.*
parasiticus, *Wall.* Parasitical Incarvillia.
Loxotis, *Brown.*
intermedea, *Bent.*

ACANTHACEAE, Justiciaworts.

Thunbergia,	Lin. (an undescribed species.)	
Hexacentris,	Nees.	
coccinea,	"	ex.
Nelsonia,	Brown.	
tomentosa,	Dietr.	
Adenosma,	Brown.	
biplicata,	Nees.	
Ebermaiera, ●	"	
humilis,	"	
Hemiadelphis,	"	
polysperma,	"	
Dipteracanthus,	"	
ciliatus,	"	
Ruellia,	Lin.	
indigofera,	Griff.	ex.
ခဲး mái-gyee.		
sarmentosa,	Nees.	ex.
quadrisaria,	Wall.	
Goldfussia,	Nees.	
anisophylla,	"	ex.
Asystasia,	Bl.	
coromandeliana,	Nees.	
Adenacanthus,	"	
acuminatus,	"	
Strobilanthes,	Bl.	
rosea,	Nees.	
glaucescens,	"	
Asteracantha,	"	
longifolia,	"	
Barleria,	Lin.	
hirsuta,	Nees.	
polytricha,	Wall.	
coerulea,	Roxb.	
dichotoma,	"	
Prionitis,	Lin.	
longiflora,	"	
hystrix,	"	

<i>Ætheilema,</i>	<i>Brown.</i>	
<i>reniforme,</i>	<i>Nees.</i>	
<i>Lepidagathis,</i>	<i>Wild.</i>	
<i>fascicula,</i>		
<i>hyalina,</i>	<i>Nees.</i>	
<i>mucronata,</i>	"	
<i>dulcis,</i>	"	
<i>Neuracanthus,</i>	"	
<i>tetragonostachyus,</i>	"	
<i>Blepharis,</i>	<i>Juss.</i>	
<i>boerhaaviæfolia,</i>	<i>Nees.</i>	
<i>Dilivaria,</i>	<i>Juss.</i>	
<i>ilicifolia,</i>	"	Holly-leaved Acanthus.
ခရာ <i>kha-ya.</i>		
<i>ebracteata,</i>	"	
<i>Crossandra,</i>	<i>Salisb.</i>	
<i>infundibuliformis,</i>	<i>Nees.</i>	
<i>Phlogacanthus,</i>	"	ex.
<i>asperulus,</i>	"	"
<i>Rostellaria,</i>	"	
<i>procumbens,</i>	"	
<i>Graptophyllum,</i>	"	
<i>hortense,</i>	"	Picture Plant. ex.
ငွေဝန် <i>gnæ-ban.</i>		
<i>lurido-sanguinem,</i>		
ခလပ် <i>sa-lat-nee.</i>		
<i>Adhatoda,</i>	<i>Herm.</i>	
<i>Betonica,</i>	<i>Nees.</i>	
<i>Wasica,</i>	"	
<i>argyrostachya,</i>	"	
<i>Leptostachya,</i>	<i>Mitch.</i>	
<i>virgata,</i>	<i>Nees.</i>	
<i>Gymnostachyum,</i>	"	
<i>leptostachyum,</i>	"	
<i>Gendarussa,</i>	<i>Rumph.</i>	
<i>vulgaris,</i>	<i>Nees.</i>	
ပဝါနက် <i>ba-wa-net.</i>		
£		

Gendarussa,		
bifaria,	<i>Nees.</i>	
decussata,	"	
ventricosa,	"	
miorantha,	<i>Wall.</i>	
Eranthemum,	<i>Brown.</i>	
cinnabarinum,	<i>Wall.</i>	Cinnabar Eranthemum.
macrophyllum,	"	
Justicia,	<i>Lin.</i>	
dentata,	<i>Klein,</i>	
tau-sa-lat,	တေဆလတ်	
Rhinacanthus,	<i>Nees.</i>	
communis,	"	ex.
Rungia,	"	
parviflora,	"	
Peristrophe,	"	
tinctoria,	"	
bicalyculata,	"	
fragilis,	"	
acuminata,	"	
Andrographis,	<i>Wall.</i>	
ochioides,	<i>Nees.</i>	
Haplanthus,	"	
tenor,	"	

LENTIBULACEÆ, Bladderworts.

Utricularia,	<i>Lin.</i>
fasciculata,	<i>Rorb.</i>

OROBANCHACEÆ, Broom Rapeworts.

Æginetia,	<i>Rorb.</i>
indica,	"

SCROPHULARIACEÆ, Figworts.

Linaria,	<i>Tournef.</i>
ramosissima,	<i>Wall.</i>
Pentstemon,	<i>Michx.</i>
levicaudatum,	

Russelia,	<i>Jacq.</i>	
<i>floribunda,</i>	<i>Kth.</i>	ex.
<i>junceae,</i>	<i>Zuce.</i>	ex.
Bonnaya,	<i>Lk.</i>	
<i>veronicæfolia,</i>	<i>Spreng.</i>	
<i>verbenæfolia,</i>	"	
<i>tenuifolia,</i>	"	
<i>parviflora</i>	<i>Benth.</i>	
Herpestris,	<i>Gartn.</i>	
<i>Monuiera,</i>	<i>Knth.</i>	
Scoparia,	<i>Lin.</i>	
<i>dulcis,</i>	"	
Glossostylis,	<i>Cham.</i>	
<i>avenis,</i>	<i>Benth.</i>	
Centranthera,	<i>Brown.</i>	
<i>Brunoniana,</i>	<i>Wall.</i>	

SOLANACEAE, Nightshades.

Capsicum,	<i>Tournef.</i>	
<i>grossum,</i>	<i>Willd.</i>	Red Pepper. ex.
ငရုပ်၊ <i>gna-yoke.</i>		
<i>gna-yoke-mo-hmyau,</i>	ငရုပ်မိုးမျှော်၊	
Solanum,	<i>Lin.</i>	Night shade.
<i>tuberosum,</i>	"	Potatoe. ex.
<i>rubrum,</i>	<i>Will.</i>	
<i>verbascifolium,</i>	<i>Lin.</i>	
<i>indicum,</i>	<i>Lin.</i>	
<i>melongena,</i>	"	Brinjal, Egg-plant. ex.
ခရုနီ၊ <i>kha-yan.</i>		
<i>kha-yan-khyen,</i>	ခရုနီကြွင်း၊	
<i>ta-byæ,</i>	တပြေ၊	
<i>næ-poo-kha-yan,</i>	နေပူခရုနီ၊	
<i>kha-yan-gywot,</i>	ခရုနီကျွတ်၊	
" " <i>pa-mai,</i>	ခရုနီပါမဲ၊	

- Lycopersicum*, *Tournef.*
esculentum, *Wall.* Tomatoe. ex.
 ခရနီမြေဖုံး *kha-yan-mya-phung.*
- Physalis*, *Lin.* Winter Cherry.
peruviana, " Brazil Gooseberry. ex.
 ပုစွန်-ပင်, * *ပုစွန်*
- Solandra*, *Swz.*
grandiflora, " ex.
- Datura*, *Lin.* Thorn-Apple.
Metel, " White " " "
alba, *Rumph.* " " "
 ပုခိုင်းသံတာ၊ ပုခိုင်းမြေ *pa-daing-phoo.*
fastuosa, *Wall.* Purple-flowered, "
Nicotinna, *Tournef.*
tabacum, *Lin.* Tobacco. ex.
 ဆေး၊ *hsa.*
- Solanaceae*,
khau-kha, (Sgau.)

GENTIANACEAE, Gentianworts.

- Canscora*, *Lin.*
diffusa, *Brown.*
schultesii, *Wall.*
- Exacum*, *Lin.*
pteranthum, *Wall.*

APOCYNACEAE, Dogbanes.

- Echites*, *Lin.*
rhynchosperma, *Wall.*
paniculata, *Roxb.* ex.
- Cleghornia*, *Wight.* (Species ?)
Epichsianthus, *Voigt.*
macrophyllus, " ex.
- Ichnocarpus*, *Brown.*
frutescens, "
- Vallaris*, *Burm.*
dichotomus, *Wall.*

* This species differs slightly from *P. minima*; *Lin.* but not enough to constitute in my judgment a distinct species.

Nerium,	<i>Lin.</i>	Oleander.	
odorum,	<i>Ait.</i>	Fragrant	“ ex.
Strophanthus,	<i>D C.</i>		
brevicaudatus,	<i>Wight.</i>		
Wrightia,	<i>Brown.</i>		
antidysenterica,	“		
tomentoso,	<i>Sch.</i>		
coccinia,	<i>Sims.</i>	Scarlet Nerium.	ex.
Wallichii,	<i>A. D C.</i>		
Vinca,	<i>Lin.</i>	Periwinkle.	
rosea,	“		ex.
သင်္ဘောမုတ္တိပန်း၊ <i>them-bau-ma-hnyo-ban.</i>			
Tabernæmontana,	<i>Plum.</i>	Tabernæmontana.	
coronaria,	<i>Brown.</i>	Garland	“ ex.
recurva,	<i>Roxb.</i>	Recurved	“
တောစလတ်၊ <i>tau-sa-lat.</i>			
rugosa,	<i>Wall.</i>		
Plumeria,	<i>Tournef.</i>		
acuminata,	<i>Ait.</i>	China Champac.	ex.
Allamanda,	<i>Lin.</i>		
cathartica,	“		ex.
ဖရောင့်ပန်း၊ <i>pha-young-ban.</i>			
Carissa,	<i>Lin.</i>		
carandas,	“	Bengal currants.	ex.
villosa,	<i>Roxb.</i>		
Cerbera,	<i>Lin.</i>		
Manghas,	“		
ကလွာ၊ <i>ka-hwa.</i>			
Calpicarpum,	<i>G. Don.</i>		
Roxburghii,	“	Periwinkle Tree.	
စလတ်၊ <i>sa-lat.</i>			
Hunteria,	<i>Roxb.</i>		
lanceolaria,	<i>Wight.</i>		
Alyxia,	<i>Banks.</i>	(Species ?)	
Ophioxylon,	<i>Lin.</i>		
serpentinum,	“		
majus,	<i>Wall.</i>		

Pottia,	
Hookeriana,	Wight.
Willughbeia,	Scop.
martabanica,	Wall.
သစ်ကျောက်နွယ်၊	theet-kyouk-nway.
Epigynum,	Wight.
griffithianum,	"
Plumeriæ,	
myet-hna-ban,	ဗွတ်နွာပန်း၊ Lancewood Tree.*
Echitæ,	
kyet-boung,	ကျက်ပေါင်း၊ Tennasserim Caoutchouc Creeper.
Apecynaceæ,	
sai-yai,	ခဲယဲ၊
hseik-ben,	ဆိတ်ပင်း၊ ? Poison Tree.
kyet-boung-pho,	ကျက်ပေါင်းဖို၊
mai-too,	မဲတူ၊
tha-pai-khau-du-deu,	(Sgau.)
nau-tha-æ,	"
nai ?	"
ka-thee-klileu,	"
hsau-ka-htau,	"

ASCLEPIACEAE, Milkweedworts,

Ceropegia,	Lin.	
lucida,	Wall.	
Arnottiana,	Wight.	
Caralluma,	Brown.	
fimbriata,	Wall.	
Boucerosia,	Wight.	
crenulata,	"	
Hoya,	Brown.	
carnosa,	"	Wax Flower. ex.
orbiculata,	Wall.	

*While this work is going through the press, I am unable to obtain a sight of the flower or fruit of this shrub ; but so far as I can recollect, the seeds are naked and the ovary is two celled, which places it in Plumeriæ, Alph. De Candolle.

Hoya.

parviflora,
Lacuna,

*Wight.**Buch.***Marsdenia,***Brown.*

tinctoria,
tenacissima ?

"

Asclepias-blus Dye.**Pergularia,***Wight.*

odorotissima,

Lin.

Sm. Fragrant Pergularia, or
Cowslip Creeper. *ex.*

pallida,

*Wight.***- Dischidia,***Brown.*

euneifolia,

Wall. (Four other species.)**Gynanema,***Brown.*

acuminata,

Wall.

molle,

"

tingens,

Spreng.

latifolium,

"

Sarcolobus,*Brown.*

globosus,

Wall.

carinatus,

"

Tylophora,*Brown.*

vomitoria,

*Voigt.***Asclepias,***Lin.*

curassavica,

" *Spurious Ipecacuanha.* *ex.***Calotropis,***Brown.*

gigantea,

"

ex.

ma-yo.

Wallichii,

Wight.

heterophylla,

*Wall.***Rhaphistemma,**

"

pulchellum,

"

Oxystelma,*Brown.*

Wallichii,

*Wight.***Holostemma,***Brown.*

fragrans,

*Wall***Hemidesmus,***Brown.*

Wallichii,

*Wight.***Gurua,***Buch.*

obovata,

"

Streptocaulon, Wight.

tomentosum, " "

extensum, “

Myriopteron, Griff.

paniculatum,

Asclepiaceæ,

kyoot-nway, ကျွတ်နွယ်။

kloo-bau, (Sgau.)

LOGANIACEAE, Loganiads.

Fagræa, *Thunb*

Roxb. Wall. Griff. (Cyrtophyllum fragrans, *Falconer.*)

အနန်၊ *a-nan.*

Strychnos, Lin.

Nux vomica, " "

ခပေါင်း၊ ခမောင်း၊ *kha-boung*.

potatorum, Lin. Clearing nut, ex.

OLEACEAE, Oliveworts.

Olea, *Tournef.*

attenuata, Wall.

JASMINACEAE, Jasmineworts.

Jaemin *Ro.* *Forsk.*

sambac, Ait. Arabian Jasmine. ex.

စပယ်၊မလိ၊ *sa-bay, ma-lee.*

simplex, Single Flowered.

Double "plenum, or great double Arabian, or Tuscan Jasmine.

သဘောမလိ: *them-bau-ma-lee.*

grandiflorum.	Lin.	Spanish or Catalanian,
		Jasmine ex.

မြတ်လေး။ *myat-læ.*

syringæfolium, Wall. Wild Jasmine.

Jasminum,

သဒ္ဓိခွဲ *then-khwa.*scandens, *Vahl.*

ex.

Nyctanthes, *Lin.*

arbor tristis, " Tree of Mourning. ex.

မိတ်တလူ *hscik-ba-lu.*

GNETACEAE, Joint Firs.

Gnetum, *Lin.*

guenon,

scandens,

Brunonianum,

CYCADACEAE, Cycads.

Cycas, *Lin.*

circinalis, "

မူသိုင်း *mu-daing.*

PINACEAE, Conifers.

Pinus, *Lin.*Latteri, *F. M.*ထင်းခွဲ *hten-roa*Dacimara, *Rumph.*orientalis, *Lamb.*ထင်မင်း *theet-men.*

EQUISETACEAE, Horsetails.

Equisetum, *Lin.* Horsetail.debile, *Rorb.*

ZINGIBERACEAE, Gingerworts.

Zingiber, *Garta.* Ginger.officinale, *Roscoc.* Common Ginger. ex.ခွင်ခွဲ *khycn-scing.*zerumbet, *Roscoe.*pardocheilum, *Woll.*squarrosum, *Rorb.*

paeduratum, "

G

Zingibier,		
barbatum,	Wall.	
me-tha-len,	မိသလင်း	
kan-eik,	ကန်ဒိဟိ	
khung-htai-wen,	ခုင်ထိုင်	
sa-kwa,	ဆာကွ	
Curcuma,	Lin.	Tumeric.
longa,	Roxb.	Common Tumeric. ex.
ဆွင်း	hæ-nwen.	
ærugiosa,	Roxb.	
attenuata,	Wall.	
comosa,	Roxb.	
elata,	"	
ornata,	Wall.	
cordata,	"	
parviflora,	"	
petiolata,	Roxb.	
plicata,	Wall.	
strobilina,	"	
Roscocana,	"	
hman-then,	မှ်ထင်း	
Dischema,	Wight.	
glaucum,	Voigt.	
Kæmpfera,	Lin.	
Galanga,	"	
ပန်ဥကမုင်းခမုင်း	kha-mung.	
rotunda,	Lin.	Fragrant Kæmpfera.
မြေပန်းတောက်	myæ-ban-touk.	
marginata,	Curry.	
candida,	Wall.	White Kæmpfera.
ပန်းဥဖြူ	pan-oo-phyoo.	
Roscoeana,	Wall.	
parviflora,	"	
ka-mung-nee,	ကမုင်းနီ	
" " net,	ကမုင်းနုထီး	

Kæmpferia,

ka-mung-teing-byn, ကမုတ်တိန်ဗျာ။

“ “ kyet-la, ကျဲလ်ကျက်လာ။

kyo-ka-mung, ကျိုကမုတ်။

Amomum, Lin.

cardamomum, “ •

မင်းဗေ ben ? •

corynostachyum, .Wall. (Several other species.)

gung-men, ဂွမ်မင်း။

Elettaria, Rhced.

cardamomum, White. Cardamomum Plant.

ဘာလာ၊ဗာလာ၊ ba-la, pa-la.

Hedychium, Kon. Garland Flower.

coronarium, “ ex,

လင်သော၊ lan-thæ.

သစ်ခက်လင်သော၊ theet-khet-lan-thæ. Narrow

Petalled Garland Flower.

barbatum, Wall.

Alpinia. Lin.

Allughas, Roscoe.

bracteata, Roxb.

nutans, Roscoe.

ပဂေါသိန်၊ pa-gau-theing.

pa-gau-gyee, ပဂေါကြီး။ •

Gastrochilus, Wall.

pulcherrimus, “

longiflorus, “

Mendophus, “

elegans, “

Elegant Kæmpferia.

ကွမ်ကတ်၊ koon-ka-do.

Costus, Lin.

speciosus, Sm.

- Costus,**
argyrophyllus, Wall.
 ဝလံတောင်ဝေ၊ *pa-lan-toung-wa.* (Sgau.)
 thoo-læ-pha-do,
- Globba,** Lin.
marantina, "
Careyana, Roxb. Cary's Globba.
expansa, Wall.
bracteolata, "
- Zingiberaceæ,**
pa-dat-swa, ပဒတ်စွာ၊
ma-la, မာလာ၊
ma-la-men, မာလာမင်း၊
sa-boo, စဘူ၊
sheet-ken, ရှစ်ကင်း၊
sa-boo-khoung, စံဘူးခေါင်း၊
 " " sung-koo, စံဘူးစုံကူး၊
po-khleu, (Sgau.)
phau-mo-phau, "
pau-lau, "
po-læ-o, "
 " bla-yu-kho, "
 " pa-yo, "
pau-mo-bau, "
po-hsau-koo, "
 " " thwee, "
 " kheu-htee, "
 " " kho, "
 " " pree-o, "

MARANTACEAE, Arrow-rootworts. .

- Phrynium,** Willd.
spicatum, Roxb.
macrostachyum, Wall.
 we-thaing, ဝါထိုင်၊

Phrynium,

myen-wa, မြင်းဝါး

yung, ယွင်း

Maranta,

Lin.

Arrow-root.

arundinaceæ,

"

ပင်ပွား pen-bwa.

dichotoma, Wall.

သွင်း then.

Canna,

Lin.

Indian Shot.

indica,

"

ပုဒ္ဓဝရံ bud-da-tha-ra-na.

ex.

MUSACEAE, Bananaworts.

Musa,

Tournef. Plantain Tree.

paradisiaca,

Lin.

ex.

ငှက်ပျော kget-pyau.

glauca, Roxb.

pyau-men, ပျောမင်း

rubra, Wall.

tau-pyan, တောပျော

Ravenala,

Adans.

Traveller's Tree.

madagascariensis, Sonner.

ex.

AMARYLLACEAE, Narcissusworts.

Zephyranthes,

Herb.

tubispatha,

"

ex.

Hippenstrum,

"

equestre,

"

ex.

solandraeflorum,

"

"

Crinum,

Lin.

procerum,

Carey.

rigidum,

Herb.

macrocarpon,

Carey.

Large Fruited Crinum.

ensifolium,

Roxb.

amoenum,

"

pratense,

Herb.

Crinum,

lorifolium,	Roxb.	
elegans,	Carey.	
erythrophyllum,	"	
ornatum,	Herb.	Ornamental Crinum.
zeylanicum,	Lin.	
Herbertianum,	Wal.	

ပုခင်း: *pa-daing*.*

yæ-pa-daing, ငရဲပုခင်း: Water Crinum.

Eurycles,	Salisb.	
amboinensis,	"	ex.

တမင်း: နေမင်း: *la-men, na-men.*

Hymenocallis,	Herb.	
amoena,	"	ex.

TACCACEAE, Taccads,

Tacca,	Forst.	
pinnatifida,	"	

ပံတက်: တောက်တာ: *tauk-ta*.

IRIDACEAE, Irids.

Iris,	Lin.	
nepalensis,	Wal.	ex.
Pardanthus,	Ker.	
chinensis,	"	Tiger Lily. ex.

သစ်စာ: *theet-sa*.

BROMELIACEAE, Pine-appleworts.

Ananas,	Plum.	
sativus,	Schult.	Pine-apple. ex.

နာနတ်: *na-nat*.

striatifolia, Roxb. Ribbon-leaved. "

HYDROCHARACEAE, Hydrocharads.

Boottia,	Bigel.	
cordata,	Wal.	

*Applied to all the species.

ORCHIDACEAE, Orchids.

Oberonia,	<i>Lindl.</i>	
anthropophora,	"	
Microstylis,	<i>Nutt.</i>	
bilobata,	<i>Lindl.</i>	
Liparis,	<i>L. C. Rich.</i>	
serræformis,	<i>Lindl.</i>	
Pholidota,	"	
articulata,	<i>Lin.</i>	
စစ်ပွန်း theet-khwa-ban.*		
Coelogyne,	<i>Lindl.</i>	
flaccida,	"	
trinervis,	"	
Bolbophyllum,	<i>Pet. Th.</i>	
auricomum,	<i>Lindl.</i>	
Careyanum,	<i>Spreng.</i>	Carey Bolbophyllum.
radiatum,	<i>Lindl.</i>	
umbellatum,	"	
ta-zeen-ban, တစ်ညပန်း	Fragrant	"
Cirrhopetalum,	<i>Lindl.</i>	
Lindleyanum,	<i>Wal.</i>	
medusa,		
Trias,	<i>Lindl.</i>	
oblonga,	"	
Eria,	"	
flava,	"	
bractescens,	"	
obesa,	"	
Aporum,	<i>Blume.</i>	
anceps,	<i>Lindl.</i>	
Dendrobium,	<i>Stoz.</i>	
formosum,	<i>Roxb.</i>	Charming Dendrobium.
secundum,	<i>Wal.</i>	Purple "
Pierardi,	<i>Roxb.</i>	Yellow "
aggregatum,	"	" "
cretaceum,		White "
teretifolium,	<i>Brown.</i>	Taper-leaved "

*This name is applied to nearly all the parasitical species in the order.

Dendrobium,		
calceolus,	<i>Rehb.</i>	
Cambridgeanum,	<i>Pant.</i>	
purpureum,	<i>Rehb.</i>	
Lindleyana,		
cucullatum,		
cuspidatum,	<i>Lindl.</i>	
pygmaeum,	"	
angulatum,	<i>Wal.</i>	
polyanthum,	"	
longicornu !*	<i>Lindl.</i>	
moschatum,	<i>Wal.</i>	
ga-mung-en, ဂံးမုင်း		
Spathoglottis,	<i>Bl.</i>	
pubescens,	<i>Lindl.</i>	
Ania,	"	
angustifolia,	"	
Cymbidium,	<i>Sax.</i>	
aloifolium,	"	
Wallichii,	<i>Lindl.</i>	
Geodorum,	<i>Jack.</i>	
candidum,	<i>Wal.</i>	
pallidum,	<i>Don.</i>	
attenuatum,	<i>Griff.</i>	
Eulophia,	<i>Brown.</i>	
fusca,	<i>Wall.</i>	
promensis,	<i>Lindl.</i>	
Vanda,	<i>Brown.</i>	
longifolia,	<i>Lindl.</i>	
gigantea,	"	
Cleisostoma,	<i>Blume.</i>	(Species ?)
Saccolabium,	"	
papillosum,	<i>Lindl.</i>	
giganteum,	"	
obliquum,	"	
rubrum,	"	
retusum,	<i>Voigt.</i>	Spotted Saccolabium.
မိုးမိုးမိုး mo-ma-khan.		

*Either this species or one nearly related to it:

Æceoclades,	<i>Lindl.</i>	
<i>ampullacea,</i>	<i>Lin.</i>	Red Saccolabium.
<i>flexuosa,</i>	<i>Lindl.</i>	
Aerides,	<i>Lour.</i>	
<i>odoratum,</i>	"	Fragrant Aerides.
<i>appendiculatum,</i>	<i>Wall.</i>	
Calanthe,	<i>Brown.</i>	
<i>vestita,</i>	<i>Wall.</i>	
Platanthera,	<i>L. C. Rich.</i>	
<i>brachyphylla,</i>	<i>Lindl.</i>	
<i>robusta,</i>	"	
<i>longibracteata,</i>	"	
Cæloglossum,	"	
<i>lacertiferum,</i>	"	
Habenaria,	<i>Willd.</i>	
<i>commelinæfolia,</i>	<i>Wall.</i>	
<i>lucida,</i>	"	
<i>promensis,</i>	<i>Lindl.</i>	
<i>tricosantha,</i>	<i>Wall.</i>	
<i>geniculata,</i>	<i>Don.</i>	
<i>rostrata,</i>	<i>Wall.</i>	
<i>acuífera,</i>	"	
Vanilla,	<i>Plum.</i>	
<i>aromatica,</i>	<i>Svoz.</i>	(A new species Fal.) ex.
Monochilus,	<i>Wall.</i>	
<i>affine,</i>	<i>Lindl.</i>	
Georchis,	"	
<i>foliosa,</i>	"	
Tropidia,	"	
<i>carculoides,</i>	"	

PALMACEAE, Palms.

Areca,	<i>Lin.</i>	Betel Palm.	
<i>catechu,</i>	"		ex.
ကွမ်သီး၊	<i>kwon-thee.</i>		
<i>kwon-thoung,</i>	ကွမ်သောင်း၊		
" <i>bung,</i>	ကွမ်ဘုမ်၊		
<i>myen-thwa,</i>	မွမ်သွား၊		
<i>hmo,</i>	မှို၊		

Arenga,	Labill.	(Species ?)
Calamus,	Lin.	Ratan.
platyspathus,	<i>Griff.</i>	
palustris,	"	
melanacanthus,	"	
concinus,	"	
nitidus,	"	
laciniosus,	"	
longisetus,	"	
arborescens,	"	Tree Ratan.
Draco ?	Wild.	Dragon's Blood.

ကျိပ်နီ၊ *kyeing-nee.*

kyeing-ta-boung, ကျိပ်တပေါင်း၊

yan-ma-lta, ရမ်မတာ၊

kyeing-kha, ကျိပ်ခါး၊

" nan-tha, ကျိပ်နံသာ၊

" tan, ကျိပ်တန်း၊

" boke, ကျိပ်ပုတ်၊

phwe-to-ma, မွှိတ်မ၊

ta-nen-tha-ree-kyeing, တနင်းသာရီကျိပ်၊

kyeing-phyoo, ကျိပ်ဖြူ၊

thwon-kyeing, သွန်းကျိပ်၊

Licuala,		
longipes,	<i>Griff.</i>	Stemless Licuala.
sha-zoung, ရှာဆောင်း၊		Walking Cane Palm,
		or Penang Lawyer.

Zalacca,	<i>Reinw.</i>	
edulis,	"	Edible Zalacca. ex.
ရင်ကပ်ချင်း <i>yen-gan-khyen.</i>		

yen-gan-khyo, ရင်ကပ်ချို၊

Calamosagus,	<i>Griff.</i>	
laciniosus,	"	Ratan-sago Palm.

Borassus,	Lin.	Palmyra Palm.	
flabelliformis,	"		ex.
ထမ်း <i>htan.</i>			
tau-htan, တောထမ်း		Wild Palmyra.	
Corypha,	Lin.		
umbraculifera,	"	Talipat, or Large Fan Palm.	ex.
လေး <i>pæ.</i>			
taliera ?	Roxb.	Book-Palm.	
လေး <i>pæ.</i>			
Livistona,	Brown.	Wild Palm.	
htan-myouk-lu, ထမ်းမြောက်လူ ?			
Phoenix,	Lin.		
dactylifera,	"	Date Palm.	ex.
ရွှံ့ပလ္လုနီ <i>swon-ba-hwon.</i>			
sylvestris,	Roxb.	Wild date.	ex.
paludosa,	"	Marsh-date Palm.	
ထမ်းတောင် <i>then-boung.</i>			
Coccos,	Lin.	Cocconut.	
nucifera,	"		ex.
စုမ်း <i>ung.</i>			
Macrocladus,	Griff.		
yen-khyen ? ရင်ညှင်း		Karen Cabbage Palm.	
Palmuceæ,			
wa-young ? ငါးရောင်း			
ka-la ? ကလား			
ta-kan ? တကမ်း			
pn-dat ? ပတတ်			
tha-lu ? သလူ			
tau-nau-me-lto-l.tee,			
" " " pree-o,			

(Sgau)

PONTEDERACEAE, Pickerel-weedworts.

Pontedera,	Lin.
vaginalis,	"
လယ်ပေါက်၊	lay-pa-douk.
plantaginea,	Roxb.
dilatata,	Buch.
ပေါက်ကြီး၊	pa-douk-gyee.
sagittata,	Roxb.

MELANTHACEAE, Colchicumworts.

Anguillaria,	Brown.
indica,	"

SMILACEAE, Sarsaparillas.

Smilax,	Tournef.	
ovalifolia,	Roxb.	
ကုလု၊	ku-ku.	
Lirope,	Lour.	(Species ?)
Teta,	Roxb.	"

ROXBURGHACEAE, Roxburghworts,

Roxburghia,	Dryand.
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DIOSCOREACEAE, Yams.

Dioscorea,	Plum.	Yam.
fusciculata,	Roxb.	Karen Potatoe. ex.
ကရွေ့၊	ka-dwa-co.	
globosa,	Roxb.	Large White Yam. ex.
မြောက်ဖြူ၊	myouk-phyeo.	
alata,	Willd.	
atropurpurea,	Roxb.	Dark-purple Yam.
မြောက်နီ၊	myouk-nee.	
crispata,	Roxb.	
မြောက်ကျာ၊	myouk-kye.	
danioua,	Roxb.	Wild Yam.
ကျေး၊	kye.	

Dioscorea,

versicolor,

Buch.

myouk-shen,

မြောက်ရှင်၊

“ pwai-toke,

“ ပွဲတု၊

twen-souk-myouk,

တွင်းခောက်မြောက်၊

sen-lung-gywot,

စင်လုပ်ကျွတ်၊

kywæ-kyouk-tha,

ကျွေးကျောက်သား၊

ka-dat,

ကဒတ်၊

kwai-ta-plu,

(Sgau.)

nai-ka-hsang-khang-long,

(Pwo.)

nwai-so,

(Sgau.)

LILIACEAE, Lilyworts.**Methonica,***Herm.*

Gloriosa.

superba,

*Lam.*ဆိမီးတောက်၊ *hsee-mee-touk.***Polianthes,***Lin.*

Tuberose.

tuberosa,

“

ex.

ခွင်းပင်၊ *hnen-ben.***Aloe,***Journesf.*

(Species ?) ex.

မုတုံ၊ *moke.***Drimia,***Jacq.*

lanceæfolia,

Ker.

ex.

Ornithogalum,*Lin.*

revolutum,

Jacq.

ex.

caudatum,

Ait.

ex.

Allium,*Lin.*

sativum,

“

Garlic,

ex.

ကျက်သွန်မြ၊ *kyet-thwon-phyoo.*

cepa,

Lin.

Common Onion. ex.

ကျက်သွန်နီ၊ *kyet-thwon-nee.*

ascalonicum,

Lin.

Shallot.

ex.

ကျက်သွန်နီ ?

porrum,

“

Leek.

ex.

တောကျက်သွန်၊ *tau-kyet-thwon.*

• H-

Hemerocallis,	<i>Lin.</i>	Day Lily.	
disticha,	<i>D. Don.</i>		ex.
fulva,	<i>Lin.</i>		"
Asparagus,	"		
officinalis,	"	Common Asparagus.	ex.
acerosus,	<i>Roxb.</i>		
ရှစ်မတက် sheet-ma-tet.			
Dracæna,	<i>Vandell.</i>	Dragon Tree.	
atropurpurea,	<i>Roxb.</i>		ex.
ကျွမ်လင်နတ် kwon-len-net.			
kwon-len-phyoo,	ကျွမ်လင်ဖျူ		

COMMELYNACEAE, Spiderworts.

Commelyna,	<i>Dill.</i>	
cæspitosa,	<i>Roxb.</i>	
hsat-lay-khyoung,	ဆတ်လယ်ကျောင်း	
ma-gywot,	မကျွတ်	
Aneilema,	<i>Brown.</i>	
herbaceum,	<i>Wall.</i>	
Flagellaria,	<i>Lin.</i>	
indica,	"	

ALISMACEAE, Water plantainworts.

Alisma,	<i>Lin.</i>	(Species ?)
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PANDANACEAE, Screwpines.

Pandanus,	<i>Lin.</i>	
odoratissimus,	"	Fragrant Screwpine. ex.
ဆတ်သွားဆတ်တုး hsat-ta-phu.		
furcatus,	<i>Roxb.</i>	
tha-bau, ta-gyet,	သဘော့တကျက်	
hsat-thwa-gyee,	ဆတ်သွားကြီး	
tau-ta-kyet,	တောတကျက်	
yæ-tu-kyet,	ရေတကျက်	

Nipa,
fruticans,
ပိနီ da-ne.

Thunb.
“

ex.

ARACEAE, Arumworts.

Pistia,
stratiotes,

Lin.
“

Ambrosinia,

Rozb.

(Species ?)

Typhonium,

Schott.

orixense,

“

Amorphophallus,

Bl.

campanulatus,

Voigt. Telinga Potatæ. ex.

O: wa.

Colocasia,

Rag.

antiquorum,

Schott.

ပိင်း ပိင်း

indica ?

Voigt.

စင်တုင်း seet-tung.

odora,

“

Fragrant Arum.

ပိင်းမလောချ်း peing-ma-haw-ya.

koung-gen-peing,

ကောင်းကင်ပိင်း

pan-naï-nat,

ပန်နဲနတ်

peing-kyan,

ပိင်းကျန်

“ ung,

“ ဂုင်း

“ kyoung-khyæ,

“ ကျောင်ကျေး

“ shau,

“ ရှော

• “ pau-htwon,

“ ပေါ်ထွန်း

wet-kyouk-peing,

ဝက်ကျောက်ပိင်း

Scindapsus,

Schott.

officinalis,

“

Pothos,

Lin.

scandens,

“

Acorus,

“

calamus,

“

Sweet Flag. ex.

လင်းလင်း len-ha.

Arum, *Roxb.*
rapiforme, "

NAJADACEAE, Pondweeds.

Potamogeton, *Lin.*
indicus, *Roxb.*
Spathium, *Lour.*
chinense, "

GRAMINACEAE, Grasses.

Panicum, *Lin.*
jumentosum, *Pers.* Guinea-grass, *ex.*
nau-ka-thau-hau, (Sgau.)
stalicum ? *Lin.* Millet. *ex.*

ဆပ်မြီး၊ ငှောင်လယ်ကောက်၊ *pyoung-lay-kouk.*

Paspalum, *Lin.*
loo, လူး၊ *Paspalum* Millet.

Sorghum, *Pers.*
vulgare, " *Holcus* Millet. *ex.*
ရှင်မြီးပြောင်း, *pyoung.* (Holchus Sorghum.)
saccharatum, *Pers.* Sorghum Millet.

ပြောင်း၊ *pyoung.*

Chrysopogon, *Host.*
acicularis, "

ငှပ်ရှင်၊ *gnung-myeet.*

Imperata, *Curillo.*
cylindrica, *Beauv.* Thatch Grass.

သက်ကယ်ညင်း၊ *thek-kay-nyen.*

Saccharum, *Lin.*
officinarum, " Sugar-cane. *ex.*

ကျံ၊ *kyan.*

violaceum, *Otaheity* Cane.
spontaneum, *Lin.* Thatch Grass.

သက်တယ်ကြီး၊ *thek-kay-gyee.*

la-man-myeet, လမန်ရှင်၊

kaing, ကိုင်၊

Saccharum,			
kyan-mai,	ကျဲမဲ၊		ex.
" men,	" မင်း၊		"
boun-g-kyan,	ဘောင်းကျဲ၊		"
htee-po-ka-hsau-hsa,		(Sgau.)	
Andropogon,	<i>Lin.</i>		
muricatus,	<i>Retz.</i>		ex.
ဝန်းရင်း၊	pan-yen.		
Schoenanthus,	<i>Lin.</i>	Lemon Grass.	ex.
စပါထင်း၊	sa-ba-len.		
ta-yu-khlau-mee-da,		(Sgau.)	
Aristida,	<i>Lin.</i>	"	
Sau.			
Anthistiria,	"	(Species ?)	
Zea,	"	Maize.	
Mays,	"		ex.
ပြောင်းပူး၊	pyoung-boo.		
Coix,	<i>Lin.</i>		
Lacrima,	"	Job's Tears,	ex.
ကလိသီး၊	ka-le-thee.		
ကလိပေါက်ပေါက်၊	ka-le-pouk-pouk.	Coix Millet.	
ka-le-hmen,	ကလိမှင်း၊		
" " shee,	" ရှည်၊		
" " theing,	" သိန်၊		
beu-wai-thoo,		(Sgau.)	
Oryza,	<i>Lin.</i>	Rice.	
sativa,	"		ex.
ကောက်ပေါင်းပေါင်း၊	sa-ba.		
Cynodon,	<i>Rich.</i>		
dactylon,	<i>Pers.</i>	Creeping Panic Grass.	
Dactyloctenium,	<i>Willd.</i>		
ægyptiacum,	<i>Beauv.</i>		
h.			

Eleusine,	Gartn.		
indica ?	"		
ဆင်ပိုမှက်။	hsen-gno-myeet.		
Arundo,	Rox.	Reed.	
phoung,*	စောင်း။		
pyoo,	ပျံ။		
kyoo,	ကျူ။		
lai,	လဲ။		
a-lo-kyoo,	အလိုကျူ။		
Hordeum,	Lin.		
hexastichon,	"	Barley.	ex.
မုယော။	mu-yau.		
Triticum,	Lin.		
vulgare,	Vill.	Wheat.	ex.
ဂျုံစပါး။	gyung-sa-ba.		
Poa,	Lin.	Meadow Grass.	
(Species ?)			
Ratzeburgia,	Kth.		
pulcherrima,	"		
Bambusa,	Schult.		
spinosa,	Roxb.		
ဝါငချပ်။	wa-gna-khyat.		
gigantea,	Wall.		
ဝါမိုး။	wa-bo.		
nana,	Roxb.		
မိလောပိနဝါ။	pe-lau-pe-nang-wa.		
wa-pyouk,	ဝါးပျောက်။		
" net,	ဝါးနက်။		
kyouk-wa,	ကျောက်ဝါး။		
gna-tai,	ငယ်။		
wa-pwot-gyee,	ဝါးပွတ်ကြီး။		

*The natives often call species of saccharum and arunda by the same names.

Bambusa,

wa-pwot-gnay, ဝါးပွတ်ငယ်၊

ten-wa, တင်းဝါး၊

wa-nway, ဝါးနှယ်၊

wa-swen-net, ဝါးစွင်းနက်၊

“ “ phyoo, “ “ ဖူ၊

wa-tho, (Sgau.)

“ klau, “

“ bau, “

• “ klæ, “

“ pho-khai, “

Graminaceæ,

myeet-nee, မျှော်နီ၊

pyoung-sa, ပျောင်းခါ၊

myeet-ya, မျှော်ယား၊

nau-wee-ko, (Sgau.)

“ lwee-khau, “

nau-ko-thæ-mai, “

tha-kee-pgæ, “

CYPERACEAE, Sedges.**Cyperus,** • *Lin.*pygmæus, *Vahl.***Kyllinga,** *Lin.*

monocephala, “

triceps, “

Fimbristylis, *Vahl.*

æstivalis, “

Hypolytrum, *Rich.*giganteum, *Wall.***Cyperæ,** *Nees.*

wet-myeet-oo, ဝက်မျှော်ခွံ၊

myeet-kyet-thwon, မျှော်ကျက်သွန်၊

tau-kyet-lay-hlee, တောကျစ်လယ်ထွီ၊

- Cyperæ*,
 hsgai-ka-tho, (Sgau.)
 " the-kee-kho, "
 " o-bo,
Scirpeæ, *Nees*.
 ta-pro. (Sgau.)*

ERIOCAULACEAE, Pipeworts.

- Eriocaulon*, *Gronov*.
 Wallichianum, *Mart*.

XYRIDACEAE, Xyrids.

- Xyris*, *Lin*.
 indica, "
 pauciflora, *Willd*.

BALANOPHORACEAE, Cynomoriums.

- Balanophora*, *Forst*.
 typhina, *Wall*.
 gigantea, "

POLYPODIACEAE, Ferns.

- Acrosticum*, *Lin*.
 aureum, *Griff*.
 difforme, "
 flagelliferum, *Wall*.
Polypodium, *Lin*.
 pertusum, *Rozb*. Pitted Polypod.
 quercifolium, *Lin*. Oak-leaved "

ဇော်ဂျီထုတ်ထုပ် *zau-gyee-ouk-htouk*.

giganteum, Tree Fern.

မုတိုင် *mu-daing*.

- Hemionitis*, *Lin*.
 cordifolia, *Rozb*. Mule Fern.
Notholena, *Brown*.
 piloselloides, *Kaulf*.

*Griffith collected seventy different sedges in the Provinces more than fifteen years ago, but not a single species has yet had its genus and species made known.

Asplenium,	<i>Lin.</i>	
Nidus,	"	
Pteris,	"	Brake.
graminifolia,	<i>Roxb.</i>	Grass Fern.
amplectens,	<i>Wall.</i>	Stipe-clasping Brake.
longifolia,		
Adiantum,	<i>Lin.</i>	Maidenhair. (Species?)
Lomaria,	<i>Willd.</i>	
scandens,	"	Scandent Lomaria.
Davallia,	<i>Sm.</i>	(Species ?)
Tœnitis,	<i>Swz.</i>	
blechnoides,	"	Tapeworm Fern.
Lygodium,	"	
scandens,		Climbing Fern.
ဒန်ရင်ကောက်၊ <i>dan-yan-kouk.</i>		
ဆတ်ရှုရစ်၊ <i>hsat.khyo-reet.</i>		

Polypodiaceæ,
 tha-loo, ထာလူး၊
 hgnet-gyee-doung, ငှက်ကြီးခေါင်း၊

LYCOPODIACEAE, Club-mosses.

Lycopodium, *Lin.* Club-moss. (Species ?)

MARSILEACEAE, Marsileaworts.

Salvinia, *Mich.*
 cucullata, *Roxb.*

BRYACEAE, Mosses.

Bryaceæ,
 ခေတ္တိ၊ *sa-hnyc.* Numerous genera and species.

FUNGACEAE, Mushrooms.

Agaricus, *Lin.*
 hmo, မှို၊

Agaricini,
 than-hmo, သံမှို၊ Vermifuge Fungus.

Phellus,
ku-thwai-la,

Misch.

(Sgau.)•

LICHENACEAE, Lichens.

Lichenaceæ,

Numerous genera and species.

ALGACEAE, Sea-weeds.

Plocaria,

Nees.

candida,

Lindl.

Edible Moss.

ကျောက်ပွင့် *kyouk-pwen.*

ANGLICIZED BURMAN NAMES.

The Burmese like the Greeks, change some of the consonants in the formation of words for the sake of euphony; but in Greek the change existed in the written as well as in the spoken language, appealing to both the eye and the ear; while in Burman the change is confined to the vocal language exclusively, and can be only recognized by the ear. In representing Burmese words by English letters, great confusion has arisen by spelling words sometimes as they are written, and sometimes as they are pronounced.

In the preceding Catalogue the Burmese names are represented as they are pronounced, and hence it becomes necessary to indicate the principles, that have governed the departures from the forms of the written words.

A Burman root or syllable beginning with any letter but a flat mute, on taking an additional syllable beginning with a smooth mute, and occasionally with an aspirated one,* change it in pronunciation, when the first root is not a verb, to its corresponding flat mute; as:

ကင်ကော၊	<i>ken-gau.</i>
ကျီးကန်၊	<i>kyee-gan.</i>
စပါ၊	<i>sa-ba.</i>
တဖွတ်၊	<i>ta-bwot.</i>
ကနဗို၊	<i>ka-na-zo.</i>
ပတောက်၊	<i>pa-douk.</i>

*က, ခ, ဂ, တ, ပ,

Smooth mutes.

ခ, ဆ, ဌ, ထ, ဖ,

Aspirate “

ဂ, ဃ, ဇ, ဈ, ည, ဋ, ဌ, ဍ, ဎ, Flat “

ပေါက်ပန်း	<i>pouk-ban.</i>
မင်္ဂလာ	<i>men-goo.</i>
ရင်းတိုက်	<i>yen-duik.</i>
ရှာစောင်း	<i>sha-zoung.</i>
လင်ကုံ	<i>len-gung.</i>
အာသာဝတီ	<i>a-tha-wa-dee.</i>
သပြေ	<i>tha-byu.</i>
ချေဖြူ	<i>ya-byoo.</i>

There are some exceptions to this rule, the most important of which is, that when the first syllable ends in a smooth mute, that of the affixed root remains unchanged; as :

လက်ပန်း	<i>let-pan.</i>
ငှက်သစ်တောက်	<i>hgnet-theet-touk.</i>
စစ်စလီ	<i>seet-sa-lee.</i>
တနုတ်စာ	<i>ta-nat-sa.</i>

This exception is an illustration of the principles that prevail in the euphonic changes in Greek, in which it is a rule that smooth mutes must be joined to smooth, flat mutes to flat, and aspirates to aspirates. In Greek however when a change occurs, it is made in the last syllable of the root, the syllable affixed remaining unchanged, the reverse of what occurs in Burman. In Sanscrit as in Greek the mute changed is that of the last syllable, but the change is carried farther; the last letter being often exchanged for one of the same class as that of the letter which follows.

When three smooth mutes occur, the second is changed to a flat mute, but the third remains unchanged; as :

ပစ္စန္ဒိဗိတ်	<i>pa-zwon-seik.</i>
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When a name is formed from a verb and noun, the rule is not intended to apply; as :

ပိုးခါး *po-sa*
ရွက်ကျပ်ပင်လိတ် *rwat-kyá-pen-pauk.*

A final nasal before a smooth mute is changed to that mute, or that mute is heard in pronunciation ; as

ခံကား *sag-ga.*
မန်ကျွန်း *mag-gyee.*
ပန်ထိန်း *pad-daing.*

Before a flat mute, a final nasal is changed to the nasal of the class to which that mute belongs ; as

ထန်ဘား *them-bax.*
ခံပယ် *sam-pay.*

A similar permutation occurs in Sanscrit and Pali ; and *n* followed by *b* is pronounced *m* in Arabic.

The English representatives of Burmese vowels and consonants, will be understood without much explanation : *wo* has the same sound as *oo*, but is thus written that the corresponding Burman letters may be easily recognized : *ga* is pronounced like *ga* in the word *gneiss* as pronounced by a German ; and *ei* like *ei* in the same word : *ex* in Karen names has the sound of *ex* in the French word *lieux* ; *e* is heard in pronunciation like *e* in *fate*, and is represented by *e* by some writers, and by *ay* by others, thus confounding it with the proper *e* and *ay* of the Burman Alphabet, from both which it widely differs. The diphthong has been adopted that the three distinct sounds, may have three distinct representatives.

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*This work having extended so much beyond the Publisher's original expectations, the Author is necessitated to study brevity in the Index. A species must be sought under its genus, and an English name, usually, by omitting the adjective.

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*After Jonesia on page 581 add,
 Amherstia, Wall.
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သောဝကအသောဝက a-thau-ka.

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*Dr. Falconer found *Careya Spherica* in the Provinces, and I may be in error in referring the species I have seen to *C. arborea*; or it may be that both species exist under the same native name. I cannot see the trees in flower while this work is going through the press to decide the question.

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Geodorum	100,624	Guilandina	148,580
Geraniaceæ	574	Gum Anime	156,566,532
Geranium	78,574	Gum Arabic	173,583
Gesnerworts	697	Gurua	615
Ginger	168,617	Guttifers	559
" worts	617	Gymnema	615
Gisekia	592	Gymnostachyum	699
Glinus	557	Gynura	601
Globba	94,620		
Globe-amarant	591	Habenaria	108,625
Gloriosa	59,94,620	Hamelia	593
Glossocarya	696	Hæmatoxylon	184,581
Glossostylis	611	Haplanthus	610
Glycine	576	Heart-seed	149,173,561
Glycosmis	569	Hebradendron	140

Hedyotis	79,593	House-leek	534
Hederaceae	553	Hoya	75,614,615
Hedychium	95	Hunteria	613
Helianthus	651	Hydrocera	574
Helicia	593	Hydrocharaceae	622
Helicteres	174,562	Hydrocharada	622
Heliotropium	602	Hydrolea	597
Hemerocallis	629	Hydroleaceae	597
Hemifadelpis	608	Hydrophyls	597
Hemidesmus	615	Hymenaea	156,582
Hemionitis	111,636	Hymenocallis	622
Hemp	193,587	Hymenodictyon	597
Henna <i>pref.</i>	69,185,567	Hymenopyramis	606
Heritiera <i>vi.</i>	117,211,562	Hyperanthera	189
Herbaceous Plants	93	Hypericaceae	560
Hesperis	611	Hypericum	560
Hewittia	596	Hypolytrum	635
Hexacentris	638		
Hibiscus <i>viii.</i>	79,89,123,140,194,564,565	Ichnocarpus	612
Hippenstrum	621	Ilex	594
Hippocrateaceae	573	Illecebraceae	573
Hippocrateada	573	Illiciaceae	594
Hiptage	573	Illipie Oil Tree	189,594
Hiraea	573	Impatiens	99,574
Hogplum	127,586	Imperata	197,632
Holchas	144,632	India-rubber Tree	587
Holigarna	187,535	Indian Shot	100,621
Hollyworts	594	Incurvillia	102,697
Hollyhock	564	Inga	126,200,583
Holmskioldia	624	Indigo	182,183,576
Holostemma	615	Indigofera	182,183,576
Homaliaceae	557	Inula	691
Homalids	557	Ipecacuanha	164,615
Honeysuckle	599	Ipomaea	103,104,148,596
Honeysuckleworts	599	Iridaceae	622
Hopea <i>ii.</i>	190,203,566	Irids	622
Hordeum	145,634	Iris	622
Horse-radish	136,557,558	Iron-wood <i>pref.</i>	62,199,200,201,560,583
Mossetail	617	Isora	174,562

Eryworts	550	Labiatae	603
Exora	ii. 78,598	Lablab	•134,578
		Lacoccha	122
Japonica	70	Laburnum	65
Jalap	99	Lactuca	142,602
Jasminaceae	616	Lagenaria	138,553
Jasmine	71,72,616	Lagerstrœmia	68,207,567
Jasmine rouge	104,595	Lantana	76,606
Jasmineworts	616	Lancewoodtree	207,214,614
Jasminum	71,72,616,617	Larkspur	547
Jack	vi. 128,129,185,199,209,538	Lathyrus	578
		Laughing Flower	559
Jambo	116,183,553	Lauraceae	590
Jambosa	116,553	Laurels	590
Jauipha	179,571	Laurus	210,212,546,590
Jasool	207,567	Lawsonia	pref. 69,567
Jatropha	179,181,571	Leadworts	602
Jerusalem Thorn	581	Leea	175,551
Jew Bush	164,572	Leek	141,629
Jewel Weed	574	Leguminosae	575
Job's Tears	633	Leguminous plants	575
Jonesia	pref. 64,65,581	Lemon grass	172,633
Juglandaceae	588	Lentibulaceae	619
Juglans	127,588	Leonotis	604
Jujube tree	125,199,570	Lepidagathis	609
Jussieua	551	Lepidium	137,557
Justicia	77,167,610	Lepisternon	598
Justiciaworts	608	Leptostachya	609
		Lettsomia	104,596
Kœmpfera	93,172,618,619	Lettuce	142,602
Kalanchoe	584	Leucas	604
Kandelia	184,188,552	Lichi	113,561
Karung	176,579	Lichenaceae	638
Kbuskhus-grass	172	Lichens	638
Kino	66,152,154,579,580	Licuala	91,626
Knema	209,548	Lign-aloes	158,590
Knotworts	573	Lilac	73,148,568
Kyaizui	212	Liliaceae	629
Kyannan	210	Lily	pref. 95,96,547,630
Kyllinga	635	Lilyworts	629

Lime	118,119,569	Madderworts	599
Limonia	569	Maesa	593
Linaria	610	Magnolia	64
Linum	191	<i>Magnoliaceae</i>	548
Linden Blooms	566	Magnoliads	548
Liparis	623	Mahogany Tree	201,568
Liquidamber	155,156,589	Maize	145,633
Lirope	628	Maidenhair	111,637
Liquorice	173,583	Malabar nightshade	140
Livistona	19,197,627	Malay Apple	116,553
Lobelia	99,597	Mallea	568
<i>Lobeliaceae</i>	597	Mallow Leaf	176,564
Lobeliads	597	Mallowworts	564
<i>Loganiaceae</i>	616	<i>Malvaceae</i>	564
Loganiads	616	Malpighia	573
Logwood	184,581	<i>Malpighiaceae</i>	573
Lomaria	111,637	Malpighiads	573
Lonicera	599	Mangifera	113,585
Loosestrifes	567	Mangrove	184,188,208,552
Lophopetalum	572	Manihot	178
Loquat	128,575	Mangosteen	ii. vii. 112, 148,559
<i>Loranthaceae</i>	555	Manna	157
Loranthus	101,555	Mango Tree	vi. 112,113, 148,585
Lotus	547	Manila hemp	115
Loxotis	607	Maranta	178,195,621
Lucerne	147	<i>Marantaceae</i>	620
Ludwigia	101,551	Marking nut	182
Luffa	138,139,555	Marsdenia	182,615
Lumnitzera	552	<i>Marsiliaceae</i>	637
Lutqua	561	Marsileaworts	657
Luvunga	569	Mastworts	586
Lycopersicum	140,612	Marvel of Peru	592
<i>Lycopdiaceae</i>	637	Maybyoung	210
Lycopodium	111,637	Marygold	602
Lygodium	109,637	Mauza	115
<i>Lythraceae</i>	567	Melaleuca	164,553
Macrocladus	91,627	Meadow Grass	147
Mace	158	Melanorrhæa	186,187,585
Madder	184		

Medicago	147	Monocera	81,567
Melanthaceae	626	“ ochilus	625
Melastoma	93,181,553	“ olophus	93,619
Melastomaceae	553	Moon Flower	595
Melastomada	553	“ seedworts	592
Melhania	563	Moss	179,637,638
Melia	73,568	Moutchee Wood	212,579
Meliaceae	568	Morinda	129,184,599
Meliads	568	“ ringa	136,189,559
Melilot	134,576	Moringaceae	558
Melilotus	134,576	Moringads	558
Melua	123,555,556	Morus	122,567
Memecylaceae	552	Moschoama	603
Memecylads	552	Mudar plant	164
Memecylon	82,185,552	Mucuna	163,579
Mendi	69	Murraya	160,214,569
Mentha	171,603	Mukia	555
Menispermaceae	592	Musa	115,116,621
Mesembryaceae	557	Musaceae	621
Moss	62,560	Microgloss a. e. Microglos-	
Methonica	629	“ sa	600
Mezoneurum	580	Mulberry	122,587
Microgloss	600	Murucua	559
Microstylis	623	Mushroom	142,637
Michelia	64,548	Musk Plant	81,148,565
Mignonette	558	Musk-mallow	148,565
Milkweedworts	614	Mussaenda	77,597
Milkworts	562	Mustard	137
Millet pref.	143,144,632,633	Myoporaceae	606
Milletia	580	Myoporads	606
Mimosa	93,582	Myoporum	606
Mimusops	66,130,593	Myriopteron	616
Mint	pref. 171,603	Myrsinaceae	593
“ worts	603	Myrsinica	158,209,548
Miralilia	99,592	Myristicaceae	548
Mistletoeworts	555	Myrobalans	163,551
Monocurra	570	Myrospermum	155,156
Mollugo	573	Myrtaceae	553
Monordia	139,555	Myrtle	553
Monenteles	691	Myrtle Blooms	553

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<i>Myrtus</i>	553	Oak	297,536
<i>Mysore Thorn</i>	530	" galls	182
<i>Nagakeshura</i>	62,560	<i>Oberonia</i>	623
<i>Najadaceae</i>	632	<i>Œceoclades</i>	625
<i>Nanas</i>	114	<i>Olacaceae</i>	551
<i>Narvelia</i>	83,547	<i>Olacads</i>	551
<i>Narcissusworts</i>	621	<i>Olux</i>	551
<i>Nasturtium</i>	137,557	<i>Ochna</i>	574
<i>Nanlea</i>	78,199,214,597	<i>Ochnaceae</i>	574
<i>Nepm Tree</i>	166,563	<i>Ochnads</i>	574
<i>Neilgherry Grass</i>	99,597	<i>Ocimum</i>	104,172,683
<i>Nelsonia</i>	638	<i>Ocotea</i>	590
<i>Nelumbiaceae</i>	548	<i>Odina</i>	212,585
<i>Nelumbium</i>	pref. 96,548	<i>Oil-of-ben Tree</i>	189,558
<i>Nephelium</i>	113,120,561	<i>Oil-seedworts</i>	607
<i>Nerium</i>	80,613	<i>Okra</i>	140,565
<i>Nettle</i>	pref. 536	<i>Olea</i>	176,616
<i>Nettleworts</i>	586	<i>Oleaceae</i>	616
<i>Neuracanthus</i>	609	<i>Oleander</i>	80,613
<i>Neuropeltis</i>	596	<i>Oleaster</i>	ii. 116,539
<i>Nicotiana</i>	161	<i>Olive</i>	176,589
<i>Nigella</i>	169,547	<i>Oliveworts</i>	616
<i>Night shade</i>	140,592,611	<i>Onagraceae</i>	551
<i>Nipa</i>	177,197,631	<i>Onion</i>	141,629
<i>Nolanaceae</i>	594	<i>Ophioxylon</i>	613
<i>Nolanads</i>	594	<i>Opium</i>	160
<i>Noli me tangere</i>	99	<i>Opuntia</i>	83,557
<i>Norysca</i>	560	<i>Ophiglossum</i>	109
<i>Notholena</i>	636	<i>Orange</i>	118,569
<i>Notonia</i>	601	<i>Orchidaceae</i>	623
<i>Noyau Plant</i>	595	<i>Orchids</i>	105,623
<i>Nutmeg</i>	153,209,548	<i>Orobanchaceae</i>	610
<i>Nux vomica</i>	162,616	<i>Ornithogalum</i>	629
<i>Nyctaginaceae</i>	592	<i>Orophea</i>	549
<i>Nyctagos</i>	592	<i>Orthosiphon</i>	603
<i>Nyctanthes</i>	72,617	<i>Oriza for Oryza</i>	144
<i>Nymphaeaceae</i>	547	<i>Oryza</i>	144,633
<i>Nymphaea</i>	95,547	<i>Osbeckia</i>	94,553
		<i>Osyris</i>	589

Oxalidaceae	575	Pedilanthus	164,572
Oxalis	575	Peepul	<i>pref.</i> 88,587
Oxystelma	613	Pelargonium	574
		Pemphis	568
Pæderia	598	Penang Lawyer	91,626
Palm 89-92,196,625-627		“ taptera	167,551
Palmaceae.	625	“ tapetes	563
Palmyra	<i>pref.</i> 89,627	Pentstemon	610
Panax	172	Pepper	163,589,611
Pandanus vii. 80,195,639		“ perworts	589
Pandanaceae	639	Pereskia	557
Panicum	144,146,632	“ gularia	615
Panic Grass	146,633	“ illa	603
Papayaceae	559	“ iwinkle	98,613
Papaynda	559	“ istrophe	610
Papaver	160	“ istylus	109
Papaya	114,148,559	“ sea	590
Papyrus	195	“ simmon	ii. 130
Paper Plant	196	Petroselinum	549
Paratropia	174,550	Phaoun	589
Pardanthus	97,622	Phallus	637
Paritium	80,194,565	Pharbitis	595
Parkinsonia	581	Phaseolus	134,135,578
Parsley	549	Phlogacanthus	609
Parsnip	• 559	Phoenix	90,91,627
Paspalum	147,632	Pholidota	108,623
Passiflora	81,122,559	Phrynium	ii. 620,621
Passifloraceae	559	Phyllanthus	121,126,570
Passion-flower	80,81,559	“ salis	121,612
Passionworts	559	“ sic nut	148,181,571
Pastinaca	559	“ tocrene	<i>pref.</i> 588
Pavetta	78,593	“ tolaccaceae	592
Pawpaw	114,118,559	Pickereel-weedworts	628
Pavonia	564	Picture plant	77,609
Pea	133,577,578	Pierardia	562
“ nut	124,580	Pimpinella	170,550
Peach	575	Pine	59,148,214,215
Peacock's pride	580	“ apple	102,114,622
Pear	61,123,575	“ appleworts	622
Pedaliaceae	607	Pinaceae	617

Pink	573	Pongamia	74,176,199,579
Pinus	215,545,617	" gatum	597
Piper	168,169,589	Pontedera	100,101,628
" betel	vii.	Pontederaceae	628
Pipeworts	636	Pothos	175,631
Piperaceae	589	Porana	596
Pisum	133,578	" celia	114
Pistia	631	" tulaca	141,573
Plantain	115,621	" tulacaria	573
Plectranthus	603	Portulacaceae	573
Placaria	179,180,638,	Potamogeton	632
Platanthera	625	" tatos	131,132,133,595,
Pluchea	600		611,628,631
Plum	ii vi. 116	Pottsia	614
Plumbaginaceae	602	Prickly Ashworts	574
" bago	98,99,148,602	" pear	83,557
" eria	68,613	Pride-of China	73,568
" erice	614	" India	73,568
Poa	147,634	Primrose	551
Pogostemon	603	Prince's Feather	97,591
Poinciana	74,580	Prionitis	550
" settia	572	" otropis	576
Poison Tree	614	Proteaceae	590
Poivrea	552	" teads	590
Pokeworts	592	Psidium	114,553
Polanisia	174,558	Psophocarpus	133,579
Polianthes	95,629	Psoralea	576
Polyalthia	549	Psychotria	78,185,598
Polygalaceae	562	Pteris	110,637
Polygala	562	Pterocarpus*	60,67,154,201,
Polygonaceae	592		202,580
" gonum	592	Pterolobium	581
" pod	110,636	Pterospermum	563
" podium	109,110,636	Ptychotis	549
Polypodiaceae	636	Pumpkin	138
Pomeae	575	Pumplemuss	569
Pomegranate	120,149,554	Purslane	141,551,573
Pondweeds	632	Punica	120,554

*Produces the Tassarim Rosewood of some writers.

PLANTS.

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Pygeum	61	Rosa	72,73,575
Pyrethrum	98,601	Rose	72,575
Pyrus	61,128,575	Rose Apple	116,553
		Rose wood	669
Quamoclit	104,595	Rosaceae	557
Quassia	79	Roseworts	575
Quassia	574	Roselle	123,565
Quercaceae	586	Rostellaria	609
Quercus	60,207,586	Rottlera	571
Quince pref.	119,148,185,	Roxburghiaceae	628
	569	Roxburghia	628
Quisqualis	552	Roxburghiworts	628
		Rourea	82,584
Radish	137,558	Rubia	184,599
Ramboutan	129	Rubus	61,123,575
Randia	598	Ruellia	182,608
Rangoon Creeper	143,552	Rueworts	574
Ranunculaceae	547	Rumex	592
Raphanus	137,558	Rungia	610
Ratzeburgia	634	Russelia	611
Raspberry	123	Rutaceae	574
Ratan vii.	92,155,197,198,		
	626	Saccolabium	107,624 625
Ravenala	86,621	Sacred Bean	96,548
Red-wood	185,186,201,	Safflower	185,602
	202,585	Saffron	pref.
Reed	ii. 634	Saccharum	177,197,632,633
Reseda	553	Sago	604
Resedaceae	553	Sago	92,177
Rhamnaceae	570	Salacia	573
Rhaphistemma	615	Salicaceae	589
Rhinacanthus	610	Salix	167,539
Rhizophora	188,208,552	Salmaalina	194,563
Rhizophoraceae	552	Salomonina	562
Rhus	585	" via	604
Rhynchosia	578	" vinia	111,637
Rice	• pref. 143,633	" wen	213
Ricinis	165,571	Samadera	79,574
Rivea	595	Sandal Wood	159,589
		" doricum vi.	124,199,563

<i>Santalum</i>	159,589	<i>Shorea</i>	190,202,203,545
<i>Santalaceae</i>	589	<i>Sida</i>	148,193,564
" <i>dalworts</i> •	589	<i>Sideroxylon</i>	594
<i>Sapindus</i>	190,561	<i>Silenaceae</i>	573
" <i>podilla</i>	121,148,593	<i>Silver Weed</i>	695
<i>Sapotaceae</i>	593	<i>Simurubaceae</i>	574
<i>Sapotads</i>	593	<i>Sinapis</i> •	137,553
<i>Sapindaceae</i>	561	<i>Sioja</i>	561
" <i>pan Wood</i>	183,580	<i>Skinneria</i>	596
<i>Sarcobolus</i>	615	<i>Smilacaceae</i>	628
<i>Sassafras</i>	171,212,590	" <i>lax</i>	172,628
<i>Sarsaparilla</i>	172,628	<i>Smithia</i>	147
<i>Scaphium</i>	563	<i>Soapberry Tree</i>	561
<i>Scepa</i>	586	" <i>nut</i>	190
<i>Scepaceae</i>	586	" <i>worts</i>	561
<i>Scepadis</i>	586	<i>Soja</i>	578
<i>Schleichera</i>	120,562	<i>Solanaceae</i>	611
<i>Scindapsus</i>	175,631	<i>Solandra</i>	612
<i>Scirpæ</i>	636	<i>Solanum</i>	133,139,611
<i>Scoparia</i> •	611	<i>Sonneratia</i>	83,210,554
<i>Scrophulariaceae</i>	610	" <i>chus</i>	602
<i>Screw-pine</i> vii. 80,195,630		" <i>erilla</i>	94,553
<i>Scutellaria</i>	604	<i>Soondre</i>	211,562
<i>Sea-cocoanut</i>	168,568	<i>Sophora</i> •	575
<i>Sebestens</i>	602	<i>Sorghum</i>	144,632
<i>Sea-weeds</i>	638	<i>Sour sop</i>	117,548
<i>Sedge</i>	142,635	<i>Sorrel</i>	592
<i>Seimicarpus</i>	182,535	<i>Southernwood</i>	167,691
<i>Sempervivum</i>	584	" <i>wellia</i>	563
<i>Senecio</i>	601	<i>Sowa</i>	170,550
<i>Senna</i>	162,188	<i>Spanish Carnation</i>	580
<i>Sensitive plant</i>	98,582	<i>Spathium</i>	142,632
<i>Sesamum</i>	176,607	" <i>oden</i>	73,607
<i>Sesbania</i>	176,577	" <i>oglottis</i>	624
<i>Sesuvium</i>	592	<i>Spermaceae</i>	599
<i>Setaria</i> •	147	<i>Spelt</i>	169
<i>Sethia</i>	573	<i>Sphæranthus</i> •	600
<i>Shaddock</i>	118,569	" <i>rococcus</i>	179
<i>Shallot</i>	629	<i>Sphenocarpus</i>	548
<i>Shoe Flower</i>	79,181,564	<i>Spiderworts</i>	101,630

Spilanthes	169,691	Tabasheer	175
Spinage	149,591	Tabernæmontana	59,75,613
" dlo trees	572	Tacca	178,622
Spondius	127,536	Taccaceæ	622
Spurge	572	Taccads	622
" worts	570	Talipat	629
Squash	137,556	Tamarind <i>pref.</i>	125,183,199,
Stachytarpheta	606		531
Stalagmitis	149	Tamarindus	125,531
Star-apple	593	Tamarisk	<i>pref.</i>
" wort	630	Tapicea	173,571
Sterculia	124,194,546,562,	Tea	561
	563	Teak	199,606
<i>Sterculiaceæ</i>	562	Tenzelworts	632
Sterculiads	562	Tecoma	697
St. John's Wort	563	Tectona	199,606
Stramonium	161	Tephrosia	148,577
Storax	155,539	Terebinths	535
" worts	594	Terminalia	163,167,181,205
Strawberry	122		551
Streptium	606	<i>Ternstromiaceæ</i>	560
Strobilanthes	608	Teta	623
Strophæanthus	76,613	<i>Tetragoniaceæ</i>	592
Streptocaulon	616	Teucrium	604
Strychnos	162,616	Thalia	195
Stylodiscus	571	Thatch Grass	197,632
Stylidium	552	Thea	561
<i>Styracææ</i>	594	Theads	560
Styrax	594	Theobroma	122,563
Sugar cane	<i>pref.</i> 177,632	Thespesia	80,565
Sumach	535	Thibandia	593
Sundew	102,553	Thorn-Apple	<i>pref.</i> 161,162,
Sunflower	601		612
Sweet cane	171	Thunbergia	59,104,608
Sweet Flag	171,631	<i>Thymelucææ</i>	599
Swietenia	291,568	Tiger Lily	96,622
Swintonia	536	<i>Tiliacææ</i>	566
Symplocos	594	Tobacco	161,612
Syndesmis	186,232,535	Toddalia	169,574
Syzygium	554	Tœnitis	111,637

Tomato	140,612	Uvaria	70,118,548
Toonwood	206		
Touch-me-not	99,574	Vacciniaceae	593
Toukyat	185	Vachellia	68,173,199,583
Tournefortia	602	Vallisneria	612
Tragia	571	Vanda	624
Traveller's Tree <i>pref.</i>	86,621	Vanilla	109,625
Tree of Mourning	72,185,617	Varnish	183,186,187,565,586
Tribulus	574	Vateria	156,187,204,566
Trias	108,623	Vatica	60,203,545,566
Trichodesma	602	Venus' fly-trap	102
Trichosanthes	138,556	Vegetables	131
Trifolium	147	Vegetable-egg	139
Trincomalee Wood	211,567	Verbena	606
Triphasia	119,568	Verbenaceae	605
Triticum	145,634	Ventilago	570
Triumfetta	566	Veronia	599
Tropidia	625	Vervain	605,606
Trumpet Flower <i>pref.</i>	73,607	Vetch	578
Trumpet-flowerworts	607	Viburnum	599
Tuberoze	95,629	Vinca	72,98,613
Tumeric <i>pref.</i>	185,186,618	Vine	<i>pref.</i> 550
Turnera	559	Vineworts	550
Turneraceae	559	Viola	558
Turnerads	559	Violaceae	558
Turnip	137,557	Violet	558
Tutsans	560	Violetworts	558
Tylophora	148,615	Virgin's Bower	83,547
Typhonium	631	Vitex	148,205,625
		Vitaceae	550
Umbellifers	549	Vineworts	550
Unona	549	Vitis	127,550
Urania	<i>pref.</i> 86		
Uraria	577	Waltheria	563
Urena	193,194,564	Walnut	127
Urtica	193,586	Walsura	568
Urticaceae	586	Water Vine	<i>pref.</i> 588
Urticea	588	Water-lemon Vine	81,559
Utricularia	610	Water pepper	562

PLANTS.

665

Water plantainworts	630	Ximenia	551
Wax Flower	75,614	Xylocarpus	168,568
Weldworts	558	Xylophylla	570
Wheat	143,145,634	Xyridaceae	636
Willow	ii. 60,167,589	Xyrids	636
Willowworts	589	Xyris	101,636
Willughbeia	124,614	Yam	<i>pref.</i> 131,132,628
Wollastonia	601	Yamanee	218
Wood-apple	119,569	Yendaik	213
Wood Oil Tree	vii. 60,166,188,566	Zalacca	vi. 126,214,626
Wood-sorrel	575	Zanonia	556
Wood-sorrelworts	575	Zea	145,633
Wormwood	601	Zephyranthes	97,621
Wrightia	60,80,148,199,613	Zingiber	168,617,618
Xanthophyllum	562	Zingiberaceae	617
Xanthoxylaceae	160,574	Ziziphus	125,570
Xanthoxylon	574	Zygophyllaceae	574

BURMESE.

အောက်	<i>pref.</i> 159,590	အုတ်	579
အင်္ဂလ	159	အုတ်တုင်	590
အင်္ဂလ	159	အောင်	75,576
အင်္ဂ	159	ဥဂ်	119,569
အင်း	204,566	ဥပင်	596
အင်းပြင်း	203,545,566	ဩဇာ	117,548
အနိမ	<i>pref.</i> (for အနိမိ) 70	ကော	117,311
“ “ မို	561	ကွန်	103,595,596
အနိ	200,616	ကွန်စုံ	132
အောင်က or သောင်က	<i>pref.</i>	ကညည်	166,189,203,506
“ “ မိုလ် ”	581	ကတက် or ကထတ် or ကထတ်	79,558
အောင်	81,122,559		
အုတ်	128,188,627		

ဆရာ	၈၂၀	ကင်ချပ်	၃၈,၈၈၂
ဆရာတန်း	၄၄၈	ကင်ဘုတ်	၆၅၈
ဆရာတော်	၁၃၁,၆၈၈	ကင်ပွတ်	၁၈၈,၁၈၈,၈၈၈
ဆရာတော်	၄၆၆	ကင်ပွတ်	၆၈၈
ဆရာတော်	၁၁၇,၂၁၁,၅၆၂	ကင်ပွတ်	၁၈၄,၆၀၇
ဆရာတော်	၂၀၀	ကင်ပွတ်	၁၉၀,၂၀၀,၅၀၇
ဆရာတော်	၁၈၄,၅၅၂	ကင်ပွတ်	၈၇,၅၅၂
ဆရာတော်	၇၃,၅၆၈	ကင်ပွတ်	၁၆၀
ဆရာတော်	၁၆၀	ကင်ပွတ်	၁၇၃,၆၈၈
ဆရာတော်	၆၁၈,၈၁၈	ကင်ပွတ်	၁၇၄,၅၈၂
ဆရာတော်	၈၂,၆၀၆	ကင်ပွတ် or ကင်ပွတ်	၅၈၈
ဆရာတော်	၅၇၈	ကင်ပွတ်	၁၄၅
ဆရာတော်	၁၅၈	ကင်ပွတ်	၁၃၆,၅၇၈
ဆရာတော် or တရား or က	၁၄၃,၁၄၄,၆၈၈	ကင်ပွတ်	၆၃၂
ဆရာတော်	၂၁၂,၅၈၈	ကင်ပွတ်	၂၀၈,၈၈၈
ဆရာတော်	၈၂၇	ကင်ပွတ်	၈၈၁
ဆရာတော်	၅၆၁	ကင်ပွတ် or ကင်ပွတ်	၁၈၄,၁၈၈,၅၆၁
ဆရာတော်	၅၅၇	ကင်ပွတ်	၅၅၈
ဆရာတော်	၁၄၄,၁၉၇,၆၈၈	ကင်ပွတ်	၅၅၀
ဆရာတော်	၅၈၀	ကင်ပွတ်	၅၄၉
ဆရာတော်	၁၆၈,၅၈၁	ကင်ပွတ်	၁၆၅,၅၇၁
ဆရာတော်	၁၈၈,၆၁၃	ကင်ပွတ်	၅၈၇,၅၈၈
ဆရာတော်	၂၁၂,၅၇၈	ကင်ပွတ်	၁၉၀,၆၁၄
ဆရာတော်	၁၆၇,၂၀၅	ကင်ပွတ်	၈၂,၅၈၈
ဆရာတော်	၁၆၀,၅၇၄	ကင်ပွတ်	၉၈,၅၈၁
ဆရာတော် or ကထာ	၇၉,၅၇၄	ကင်ပွတ်	၅၈၈
ဆရာတော်	၆၃,၅၆၈	ကင်ပွတ်	၉၇,၁၂၀,၅၆၁, ၅၆၂,၅၈၁

ကျွတ်သားတင်း	570	ကျွတ်နှယ်	616
ကျွတ်သွန်	141,173,629	ကျွတ်ညည်း	• 74,579
ကျွတ်ထင်းခါး	139,555,573	ကျွတ်ထွီ i. e. ကျွတ်သွေး	209
ကျွတ်	177,632,633	ကျွတ်သွေး	549
ကျွတ်	pref. 95,547	ကျွတ်လိုက်သပြေ	554
ကျွတ်ထက်ကြီး	175,551		
ကျွတ်	92,155,198,626	ခမုတ်	587
ကျွတ်ပေါင်း	555	ခမုတ်	162,616
ကျွတ်အာ	556	ခမုတ်	172,618
ကျွတ်	634	ခမုတ်	162,616
ကျွတ်ကြီး	71,554	ခမုတ်နီ	• 68,207,567
ကျွတ်	212,590	ခမုတ်လေဝင်	114
ကျွတ်သား	71,554	ခမုတ်နီ	139,611
ကျွတ်ခွင်ပေါင်	557	ခမုတ်နီမြေပုံ	140,612
ကျွတ်ပွင့်	180,638	ခမုတ်	593
ကျွတ်ဖရုံ	138,555	ခမုတ်	66,100,593,609
ကျွတ်မွဲ	123	ခမုတ်	139
ကျွတ်ကျက်	584	ခမုတ် i. e. ခမုတ်	165
ကျွတ်ပန်း	76,605	ခမုတ်	571
ကျွတ်ရှာ	73,607	ခမုတ်	191
ကြွတ်နီ for ကြွတ်နီ	563	ခမုတ်ရမ်း	79,564
ကြွတ်နီ or ကြွတ်နီ	210	ခမုတ်စိန်း	168,617
ကျွတ်နီ	199,606	ခမုတ်ဗေင်	123,565
ကျွတ်ကတိုး	93,619	ခမုတ်ရွှေ	196,573
ကျွတ်ရွက်	169,589	ခမုတ်	182,202,585
ကျွတ်လင်	84,630	ခမုတ်ပန်	182
ကျွတ်သီး	92,625	ခမုတ်လိမ်မော်	118
ကျွတ်	127,132,586,628	ခမုတ်လေး	163,579

ခွေးတောက်	594	စုန်စပါး	170,550
ဂုဏ်ခပ် ဂုဏ်ခပ်	624	စုန်နက်	169,547
ဂျင်ခါး or ဂျင်ဂါ	139,573	စုန်နီ	137,557
ဂျင်ဆိုင်	140,592	စုန်နတ်	170,549,550
ဂျုံစပါး	145,634	စုန်လတ်	72,77,609,610,613
ဂွမ်	193,536	စုန်လဲ	120
ငယ်	634	စုန်ပွန်း	70,549
ငရဲပတူ	64,635	စုန်လှင်ကျွတ်	629
ငရဲကြီး	175	စုန်	206,583
ငရဲပိ	142,611	စာကွ	618
ငရဲပိကောင်း	163,539	စစ်တုမ်	631
ငလင်းကျော်	212	စာသခွား	556
ဂု	65,531	စံကား	64,548
ဂုဏ်မျှစ်	146,632	မိန်သခွား	555
ငွေပန်း	77,98,106,609	စုန်စင်	118,569
ငှက်ကြီးခေါင်	637	စုန်လာနုဇာ	605
ငှက်ပျော	116,621	စုန်လဲ	614
စကားစံကား	64,548	စောင်	183,552
စင်ပွန်း	70,549	စွန်ပလွန်	90,627
စန္ဒကူး	159,539	ဆန္ဒင်း or သန္ဒင်း	618
စာယံ	71,616	ဆင်ဒိုမျက်	147,634
စပါး	144,633	ဆင်ကျက်မောက်	562
စပါးလင်	172,633	ဆတ်ချိုရပ်	637
စဉ်	127,139,155	ဆတ်	143
စဉ်	127,550	ဆတ်ဆွား	80
စဘူး	62	ဆတ်တဖူး	80,630
စဉ်	170,55	ဆတ်မြီး	144,632
စဉ်	117	ဆတ်လယ်ချောင်း	630

ဆတ်သွား	80,195,680	တစည်ပန်း	108,628
ဆိတ်ပင်	614	တညင်း	126,583
ဆိတ်ချေး	561	တည်	130,201,594
ဆိတ်ဘလူး	72,617	တနတ်စာ	549
ဆိ or ဇီး	125	တနွဲ့က	130
ဆီးမြ	121,126	တဝု	210,554
ဆီးမီးတောက်	94,629	တပွတ်	118,548
ဆူး	185,602	တမု	210,554
ဆူးကျပ်ပိုး	580	တရေ၌	567
ဆေးနစ်ရာလေပန်း	98	တယ်	130,201,594
ဆေး	161,612	တရာပြက်	76
ဆေးခါးကြီး	167	တရုပ်ခံကား	68
ဆေးလေ	196,590	တယော	572
ဆောက်	599	တရေ၌	208
ဆောင်းဝါး	121	တရှား	126
အာဒိဗိုလ်	158,548	တလပ်ကျပ်ကျပ်	152
အာဒိဗိုလ်ပွင့်	158	တလဟတ်	199,606
ဇီယာ	170,550	တလီထိ	82,584
ဇီး or ဆီး	570	တလှံ	91
အော်ကီယုတ်ထုပ်	110,636	တဟတ်	199,606
အောင်ယား	121,575	တိန်ညက်	183,580
ညှန်	577	တောကျက်သွန်	141,629
ညာ	577	တောကမင်္ဂ	549
ညော	184,598	တောကျက်လယ်ထိုး	635
ညောင်	88,89,126,587	တောကွမ်	169,589
အကမ်	627	တောမကျည်း or တောမန်း	
အကျားကြီးပိန်	110	ကျည်း	213,567
အကျက်	630	တောရော	621

တောမုန့်ဆီ	581	တေက်ထက်	587
တောရှောက်	569	တေက်တလောက်	580
တောက်ရပ်	594	ဝေ	69,567
တောက်တာ	178,622	ဝေးဝယ်ခွင်း	85,552
တောင်ခဲ	580	ဝေးဝယ်သီလာ	74
တောင်ခံကား	209,548	နိတရုတ်	156,589
တောင်တလဲ	187,560	နိနိ	170,550
တောင်မိနိနိ or တောင်မိနိ	129,209,588	နီဝါ	565
တောင်သန့်ကြီး	160,574	နီယံကစွန်း	595
ထင်းရှူး	82,211,216,588,617	နီယံဂျီ	173,583
ထပ်တရာ	602	နီယံနီ	107,595
ထပ်	89,627	နီယံဘလံ	67
ထပ်မြောက်လူ	91,627	နီင်းဒိပ်	76,605
ထမင်းဆုပ်ကြီး	175,570	နီင်းဆီ	72,575
ထိကရုပ်	98,532	နီင်း	95,629
ထိနိ	597	နီင်း or နီင်း	212,585
ထောက်ရှာ	205,605	နီင်းလုံးခွင်း or နီင်းလှုပ်ခွင်း or နီင်းလှုပ်ကြွင်း	68,583
မနိကွဲ	162,581	နီင်း	170,607
မနိဓလတ်	99,574	နီင်းနတ်	114,622
မနိခံငေါက်	169	နီင်းမင်း	622
မနိရင်ကောက်	109,637	ပဂေါ	619
မနိသလုံ or သလုံ	136,189	ပစု	181
မနိ	553	ပကျယ်သိနိ	560
မိဂျီ	177,631	ပညောင်	88
မုပ်ကတက်	117	ပဘတ်	627
မုရည်း	584	ပတောက်	67,154,202,530
မောင်းစုတ်	112,562	ပဒပ်ငနိ	70
	74,580		

ပဒတ်ရွာ	620	ပင်စိန်း	171
ပဒုရွာ	pref. 54	ပိန်နု	128,588
ပခေါက် or ပတာက်	101,628	ပိတ်	102,631
ပမိုင်း	96,161,162,612,622	ပုင်ညက်	560
ပရဝါ	208,560	ပုင်ပင်	612
ပရုတ်	152	ပေ	90,627
ပလံ	532	ပဲ 133-136,576,578,579,583	
ပလံတောင်ဝေး	99,620	ပဲရင်းချပ်	135
ပင်စိန်း	104,171,603	ပဲလင်းခွေ	138,556
ပင်ပွား	178,621	ပဲသံတာ	135,583
ပင်လယ်အုပ်	168,568	ပေါက်	66,155,577,579
ပင်လယ်ကွန်	103,596	ပေါက်ပန်	135,577
ပန်	134,559	ပေါက်ခွယ်	66,579
ဝန်နုနုတ်	631	ပိုးစာ	122,587
ဝန်းဥ	93,619	ပိုက်သံ	576
ပန်းစိတ်	78,593	ပွင်းကတ်း	200,583
ပန်းတိမ်ငို*	94,620	ပွင်းမ*	68,567
ပန်းနုသာ	210,590	ပွင့်ခိုင်လင်း	193,564
ပန်းရင်း	172,633	ပွင့်တောင်ဥ	99
ပန်းရှစ်	99,574	ပျောမင်	621
ပန်းသစ်ယား	204,566	ပြည်တကာနီသီး	182
ပင် i.e. ပိတ်	133	ပျံ	188,208,552
ပံဘတ်	178,622	ပျံ	634
ပံ	193,576	ပြောင် 143,144,145,632,633,	
မိလောပိန်မြောက် or	ပူလော		635
ပိန်မြောက်	179,571	ပြောင်လယ်ကောက်	144,632
မိတ်ချင်း	168,539	ပွေးကိုင်း	162

*Globba Careyana.

**"Lagerstrœmia macrocarpa," F&L.

စရောင်းပန်း	613	ဆက်ကလပ်	587
ဇာလာ	619	ဆက်သစ်	73,607
ခုံညွှန်	208	ဆင်	161,587
ဇရစ်	137,138	ဆန်းခါး	163,551
စုင်မသိပ်	152,600	ဆန့်ကျွေး	209,555
ခန်းခါး	163	ဆာလာ	171,619
ခရဲ	123,555	ဘိန်း	160
ဇက်ဝန်း	566	ဘူးဆင်စွယ်	138,555
ဇက်ယား or ဆက်ယား	571,	ဘူးခါး	558
	586,588	ဘူတရပ်	86,593
စရောင်းပန်	75	ဘူဒီနီ	603
မိလောပိနီဝါ	198,634	မဇူ	78,597
ဇောင်	634	မကျည် or မန်းကျည်း	125,581
ခုံညွတ်	560	မကျွတ်	630
စုင်မသိပ်	152,400	မစ်ကသို	172
မို့ထိုမ	626	မည်စည် or မည်ရူ or မြေစု	99,592
စွဲပေါင်း	127	မညှိုးပန်း	97,98,591,613
မဝါနက်	100,609	မရန်	113,585
မင်း	619	မရိုး	164,615
မိစပ်	601	မလခဲ	173,561
မုတ်	201,594	မလိ	71,616
မုဒ္ဒသရန	100,621	မဟာလောကား	67,582
မူကြီး	76,75,605	မင်ကု	112,559
မာမိ	88	မင်ဂု	116,589
ဆလူးလက်ဝါး	81,174,550	မယ်ကယ်	214,569
ဆလူးဝါ	565	မာရ်နတ်	88
ဆက်ရွေးရွှင်	194,565		

PLANTS.

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မာလာ	620	မှတ်	635
မာလာကာ	114,553	မြစ်ပျံ	94,553
မိသလင်	618	မြတ်ယာ	82,567
မုတ်	157,629	မြတ်လေး	71,104,595,616
မုတ်ဆိုးလှနီမ	174,577	မြေပန်းတောက်	93
မုယော	143,145,634	မြေပဲ	124,580
မိုညင်း	137,558	မြေပျက်	141,573
မုနီလာ	137,557,558	မြေပန်တောက်	618
မူဝှံ	89,109,617,636	မြောက်	132,628,629
မဲကြီး	163,182,608	မြောက်ခါးပတ်	582
မဲစလီ	65,163,581	မြောက်ချောမြောက်ငို	207,580
မဲတူ*	614	မြောက်ရှော	207,580
မဲဒိ	182	မြောက်လုပ်	129,588
မဲနယ်	182,576	မြောက်လွှေကား	68,582
မဲနွယ်	182	မှန်	119,569
မဲပျောင်	210	မှန်သင်း	171,212,590,618
မဲဦး	183	မှို	142,625,637
မောင်မကြီး	196	ယမနေ or ယေမနေ	213,572
မောင်မငယ်	196	ယုမ်	621
မိုဗ်ကြီးပန်း	548	ယဲယို	129
မိုဗ်ခံ	624	ယင်နှောင်	551
မိုဗ်မာ	167,589	ရင်ကပ်	126,214,626
မိုဗ်သီး	178	ရင်ခတ်	77,597
မှက်နှာပန်း	214,614	ရင်ချင်	91,621
မှင်္ဂွား	625	ရင်းတိုင်	213
မြင်းချေးတညက်	82,552	ရင်းတိုက်	201,213,594
မြင်ဝါ	621	ရင်ခေါင်	127,550

*Marsdenia tenacissima ?

ရင်ခွေကြောက်ခြင်း	603	လ စွတ်	113,585
ရင်မထာ	626	လက်တောက်	156,187,566
ရင်ပထီ or ရှမထာ	140,565	လက်ပံ	194
ရေဗြိ	637	လင်သာ	171,631
ရေလုံချပ်သာ	599	လင်ကောင်	572
ရေသူကြီး	176,577	လင်းလွန်း (ရာဇသတ်နု Pali*)	
ရွက်ကျပ်ပေါက်	100,584	လမ်းသေး	95,619
ရွေး	196,578,583	လယ်ပတောက်	100,628
ရှုစောင်	91,626	လိမ်မော်	118,569
ရှင်	194	လူး	143,632
ရှင်ခြီး	632	လူးနတ်ကောက်	143,145
ရှင်စောင်း	190	လေးညင်းပွင့်	157,158,553
ရှစ်ချေး or ရှင်ချေး	187,585	လဲ	194,563,634
ရှစ်ကင်း	620	လောဟ	159
ရှင်မတက်	136,630	လှိုင်	104,603
ရှည်ဖွတ်	582	ဝ	133,631
ရှန်းခဲ	182,576	ဝက်ချေးပနဲ	564
ရှား	168,582	ဝက်မျက်	142,635
ရှားစောင်း	83,572	ဝက်လာ	195
ရှိုင်းရို	157	ဝက်သစ်	130,586
ရှောက်	118-120,569	ဝရောင်းချင်	551
ရှော်	194,563	ဝါ	191,192,565
ရွှေခရိုင်	137,556	ဝါး	145,198,634,635
လက်ပုလိ	124,562	ဝါထကကြောက်	175
လမင်း	97,622	ဝဆိုပန်	81,567
လမန်းမျှစ်	632	ဝါးမြစ်	141
လမု or တမု	210,554	ဝါးရို	163

*This is one of the Buddhist sacred trees that I have not seen. Turnour calls it *Buchanania latifolia*.

PLANTS.

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ဝဲဂါရော့	627	သက်ရင်းနီ	165,571
သဒ္ဓါး	123,139,556	သင်	195,621
သညည့်နီ for ကညည့်နီ	304	သင်ကန်း	203,566
သမိဝါ	166,570	သင်ရွှေ	173,617
သနတ်	692	သင်ထိပ်	195
သနတ်ခါး	509	သင်ပန်	80,564
သနကား i.e. သနတ်ခါး	160	သင်ဘောင်း	91,627
သနတ်တော်	151,560	သင်ကတိုး	206,566
သန္တင်း	185	သင်ကျောက်နွယ်	614
သမိတ်	207,566	သင်ကြ	127,566
သပြေ	141,549	သင်ကြိုး or သင်ကွပ်ဒိုး	157,590
သပြေသပြေ	116,553	သင်ခက်ထပ်သား	95
သပြေ	183,553,554	သင်ခါး	167,205 551
သဖွတ် or သထွတ်	138,139,	သင်ချ	123,586
	555,556	သင်ခွပ်နီ	106,106,623
သဘော့	195,630	သင်ခာ	97,622
သမာက	552	သင်ခေ	186,187,585
သရက်	113,585	သင်ဆောက်မိုး	207,580
သရဘိ	206,560	သင်တ	123
သလူ	627,637	သင်တဆိန်	213
သလေး	143	သင်တို	124,568
သလဲ	120,554	သင်မကျည်	213
သဇံ or ရေသဇံ*	587	သင်မင်း	215,617
သက်ကယ်ကြီး	197,632	သင်မည်စူ	176,579
သက်ရင်းကတော် or သက်ရင်းကတိုး	166,571		

*A species of *Ficus* that bears its fruit in fascicles, nearly related if not identical with the *F. glomerata*, of Roxburgh.

ဆစ်ရာ or ဆစ်တာ	70,208,	သံသစ်	210,697
	561	သံမရာ	119,569
တာဝ	178	သံခို	163,537
သားမချုပ်	176,564	သံလွင်	213,567
သီတင်း	184,559	သောက i. e. အသောက	62 .
သီတိသရက်	125,585	တင်းကနွယ်	140,591
သုန်ဆင့်ပန်း	77,597	တင်းကတာ	169,601
သုဝဏ်ဇေ	174,562	ဟိန်ခိုသီး	114

MAMMALS.*

Antelope	246,486	Cheetah	217
Antelope	246	Cheiroptera	222,482
Ant-eater	239	Chevrotain	244,485
Ape	218,220	Civet	227,228,483
Arctictis	226,482	Cow	217
Arctonyx	<i>pref.</i> 225,482		
Arvicola	237,484	Deer <i>pref.</i>	217,244,246,485
Ass	244,485	Delphinus	250,486
		Dog	217,227,482,483
Badger	<i>pref.</i> 225	Edentata	239,484
Bamboo-rat	217	Elephant	217,239,485
Barbyrusa	217	Elephas	240,485
Bat	222,223,482	Elk	<i>pref.</i> 217
Balæna	250	Equus	244,485
Balænoptera	250		
Bear	225,482	Felis	231,233,483
Bison	<i>pref.</i> 217,247	Felisleopardus	483
Bos <i>pref.</i>	247,248,250,486	Fox	222,482
Bubalus	250,486		
Buffalo	249,486	Gaur	217,247,486
		Genetta	227
Canis	227,482,483	Gibbon	218,481
Cambtan	246	Globicephalus	486
Capra	247,486	Goat	217,247,486
Carnivora	225,482	Goat-antelope	217,246,486
Cat	233,483	Guana	<i>pref.</i>
Cercocebus	220,481	Gulo	226
Cercopithecus	220	Gymnura	217,224,482
Cervus	245,246,485		
Cetacea	250,486	Hare	238,484
Chaus	223,483	Helictes	226,482
Chevreuil	245	Hedge-hog	<i>pref.</i>

*In correspondence with Capt Phayre, Commissioner of Arracan, I have been favored with some additional items of interest pertaining to Zoology, which will be found in the index in the form of notes.

Hipposideros	223,482	Mouse	257,484
Histrix for Hystrix	484	Monkey	217,221,481
Hystrix	238,484	Monkey-tiger	226,482
> Hog	217,240,485	Musk-rat	pref. 224
Homo	218	Musang	228
> Horse	243,485	Must	237,238,484
Hyena	pref.	Muntjacus	245
Hylobates	218,219,481	Moschus	244
Hypudeus	238	Næmorhedus†	246,486
Ichneumon	228,229	Nycticebus	221,481
Ictides	226	Nycticeius	223
Isectivora for Insectivora	482	Nyctoeleptes	238
Insectivora	224	Nylghau	217,644
Inuus	220,221,381	Opposum	217
> Jackal*		Otter	226,482
Kambing	246	Ovis	247,486
Lamar	221,481	Ox	247,248,486
> Leopard	217,231,282,483	Pachydermata	239,485
Leopardus	231	Paguma	228,483
Lepus	238,239,484	Pangolin	pref. 239,484
Loris	217,221	Panolia	246,485
Lutra	226,382	Papio	221
Macacus	220,221,481	Paradoxure	217,228,229,483
Mammals	471	Pelandok	244
Manis	239,484	Paradoxurus	226,228,229
Marmot	238	Pig-bear	225,482
Mole	217	Pithecus	218
Monitor	pref.	Platyschista	228
		Porpoise	250,486

* "The Jackal is known in a portion of the low country of Arakan i. e. on the narrow plains skirting the sea shore as far South as the Ma-yu river. It is no doubt of comparatively late introduction into the country from Bengal, since the occupation by the British, and appears to have followed the numerous parties of coolies who annually come by land to Arakan. The animal has thus increased much of late years."—*Phayre*.

† Mr. Blythe has recently described a new species of rat from Mergui which he has named *Mus Borneol*.

‡ In province Amherst, the species I met was *N. Sumatrensis*. In Amkan it is *N. ruber*.—*Phayre*.

MAMMALS.

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> Porcupine	<i>pref.</i> 238,484	Sloth	221,481
Procytes	219,481	Solidungula	243,485
Pteromys	236,484	Sorex	224,482
Pteropus	222,482	Spalax	238
Quadrumana	218,481	Squirrel	233-236,483,484 ✓
Rabbit	239,484	Stenops	221
Racoon	217	Styloceros	245,485
> Rat	237,238,484	Sus	240,485 ✓
Rhinoceros	240,242,485	Tapir	217,243,485
Rhinolophus	223	Taguan	236
Rhizomys	238,484	Tapirus	243,485
Rodentia	233,483	Tiger	229,483 ✓
Ruminantia	244,485	Tigris	231,483 ✓
Rusa	<i>pref.</i> 217,246,485	Tragulid	244,485
Sambur	<i>pref.</i> 246	Tupaia	224,482
Sciurus	234,236,483,484	Ursus	225,482 ✓
Sand-badger	217,225	Urva	229,483
Sand-hog	225	Vesperulio	222,223
Scotophilus	222,223,482	Viverra	226,227,483
Semnopithecus	219	Viverricula	227
> Sheep	217,247,486	Weasel	226,482
Shrew	<i>pref.</i> 224,482	Whale*	250,486
> Simia	218,219,220,221	Wolf	217

BURMESE.

ကျား	231,232,483	ကြောင်မြီးကောက်	226
ကျားသစ်	483	ကြောင်စက်ခုံ	233,483
ကျားကျွတ်	233	ကြောင်မြင်း	226,483
ကြောင်	233,483	ကြောင်နဂါး	228,483
ကြောင်ပြန်	226,482	ကြောင်ပိမိုက်	228,483
ကြောင်ကထိုး	227,483	ကြောင်နှားရွက်မြုံ	229,483

*A whale was lately thrown on the Arakan coast which was more than sixty feet in length.—*Phayre.*

ကြက်	237,484	မှုံ	226,482
ကြက်စူးပုံ*		မြို့	238,484
ကြက်စုတ်	224,482	ဖူးကောင်	239,484
ကြွေ	241-243,485	ချောက်	218-221,481
အွေ	250,486	ချောက်ကြား	226,482
ချေ	245,485	မြင်း	244,485
ချေးထိုချေးထာ	218	မြီးမြည်း	244,485
ချောင်း	483	မြို့ပါ	229,483
ချွေး	227,482,483	ယုံ	238,244,484,485
ချွေးတဝက်ဝက်တဝက်	225,	ရှင်	234,235,483
	482	ရှင်မွေ||	
ချွေးတုဝက်တု	225	ရှင်ပုံ	236,484
ရှို	425,485	လဘိုင်	250,486
စူး	224,482	လင်	222,223,482
မိုင်	248,486	လင်ရှင်းလင်းသက်¶	
ဆင်	240,485,486	လဟိုးလဟါဒ်	
ဆတ်	246,485	လှဝံ	225
ဆိတ်	246,247,486	ဝက်	240,485
တရု	243,485	ဝက်ဝံ	225,482
တောမြင်း†		ဝယောင်ကြောင်မြောက်	227
ထိုထောင်‡		သစ်ကျွတ်	233
ဒရယ်	245,485	သစ်ကြောင်	233
ခွား	248,486	သင်းခွေချပ်	239,484
ပြောင်	247,486	သမင်	246,485
ပွေး	238,484	သိုး	247,489

* *Pteromys spadiceus*.

† The name given to *Hylobates* in Ramree,

‡ A name given to the Goat Antelope

|| *Sciurus lokroide*

§ A name given in Arakan to the *Hylobates*.

¶ *Sciurus bicolor*

226,484

219,481

246,486

235,484

219,481

234,483

FISH.

The catalogue of the *Sciæninae* on page 488 is in such inextricable confusion, that it is here reprinted as the only way by which it can be corrected.

SCIÆNINÆ Umber tribe.

OTOLITHUS pama *Cuv.* Indian Whiting,

Bolo " *Buch.*

Sciæna " *Cuv.*

ငါးငြိမ်း *gna-byeet,*

OTOLITHUS binauritus *Cantor.* Indian whiting,

Johnius coitor

Bola "

Corvinus "

ငါးပုတ်သင်၊ ငါးငြိမ်း *gna-poke-then, gna-byeet,*

JOHNIUS chaptis *Bola.* Indian Whiting,

Bolo " *Buch.*

Corvinus " *Cuv.*

နတ်ကတော် *nat-ka-dau,*

JOHNIUS diacanthus, *Lacep* Indian Whiting,

" cataleus, *Cuv.*

Lutjanus diacanthus, *Lacep.*

Corvina catalea, *Cuv.*

Sciæna maculata, *Grey.*

CORVINA solada, *Lacep.*

Holocentre solada, "

Corvina miles, *Cuv.*

Sciæna argentea, *Khul.*

တေပါင်းကျံ၊ တလုံးပုံ၊ တလောင်းပါင်း

Abramis	313,315,492	Chela	317,493
Acanthopteri	487	Chatæsus	318,320
Ageniosus	325,496	Chanda	487
Alosa	319,320,494	Cirrin	310
Ambassus	487	Cirrinus	310,311,491
Amblyopus	307,309,491	Clarias	325,496
Amphiprion	489	Clupea	490,493,494
Anabas	489	Clupanodon	494
Anchovy	<i>pref.</i> 318,319	Clupinæ	493
Anguilla	329,497,498	Cobitis	318,493
Anthias	489	Cockup	<i>pref.</i> 301,302,487
Apocryptes	490	Coilia	494
Apodes	497	Coinus	487,489
Arius	496	Colliomorus	490
		Coliouymus	490
Bacaila	310,316	Conger	498
Bagrus	496	Congrus	498
Band-fish	<i>pref.</i> 301,302,487	Corvina	488
Barbel	<i>pref.</i> 310,312,313	Corvinus	303
Barbus	312,313,492	Coryphænidæ	490
Batrachus	490	Cotte	490
Belone	320,494	Cottus	490
Boh	303,488	Cyhium	489
Bombay duck	493	Cyprininæ	491
Brachirus	<i>pref.</i> 321,495	Cyprinus	311-313,315-317, 491-493
Bream	<i>pref.</i> 310,313,315, 492	Doree	<i>pref.</i> 307,308,490
Breviceps	322,495	Eel	<i>pref.</i> 329-332,497,498
Calabasu	311,491	Eleotris	491
Callichrus	324,496	Elephant-ear-fish	302
Capoeta	493	Engraulis	319,494
Carp	<i>pref.</i> ii, 310,491,492	Equula	308,490
Cartilagines	326,497	Esocinæ	494
Cat-fish	<i>pref.</i> 322-326,495-497	Esox	321,494
Cepola	491	Exocetus	320,494
Chætodon	302,487	Felichthys	495
Chætodonidæ	487	Fish	489
Chætomus	494	Fishing frog	<i>pref.</i> 328,497

Flat-fish	318,495	Lutjanus	488
Flathead	307,309,490	Lycodontis	498
Flying fish <i>pref.</i>	318,320,404	Mackerel	307,489
Gar-fish <i>pref.</i>	318,320,321,494	Macrogathus	308,489
Gobiidæ	490	Macroleptes	301
Gobio <i>pref.</i>	316,317,493	Malacopteri	491
Gobioidæ	491	Mango fish <i>pref.</i>	301,304,488
Gobius	309,490	Mastacembalus	308,489
Goby	307,309,490	Microleptes	307
Gudgeon <i>pref.</i>	310,316,317,493	Monopterus	498
Gymnetres	309,490	Morton-barbel	312,492
Gymnothorax	498	Muræna	498
Hamiltonia	487	Murænesox	331,332,498
Harpodon	493	Murænophis	498
Hemiramphus	321,494	Mugilidæ	488
Herring <i>pref.</i>	318,320,493,494	Mugil	303,304,488
Holocentre	487,488	Mullet <i>pref.</i>	301,303,304,488
Ichthyology	301	Nandina	311,491
Johnius	488	Notopterus	320,494
King-fish	301,304,489	Ophidian <i>pref.</i>	307,308,489
Labeo	310-312,491	Ophicardia	331,498
Lagocephalus	328,497	Ophiocephalus	306,489
Large-snout	307,308,489	Ophisternon	331
Lates	302,487	Opsarion	310,316,492
Laurida	493	Opsarius	316,317,492,493
Leisomus	328,497	Oreinus	313,492
Leuciscus	318,493	Osmerus	493
Loach <i>pref.</i>	310,318,493	Otolithus	488
Longsnout	<i>pref.</i> 307	Pellona	493
Lophius	328,497	Perca	301,305,487,489
Lutjan	489	Perch <i>pref.</i>	301,305,487,489
		Percinæ	487
		Percis	487
		Percophinæ	487
		Perikamp	310,315,492
		Perilampus	315,492

Periophthalmus	307,300,491	Shad	318,319,320,494
Pike	318,321,494	Shark	<i>pref.</i> 326,327,497
Pimelodinæ	322,323	Silago	302,487
Pimelodus	322,495	Silonia	496
Plagusia	<i>pref.</i> 321,495	Silure	324
Platecephalus	309,490	Silurus	324,496
Platygaster	318,493	Siluridae	495,497
Plectognathes	328,497	Snake-head	<i>pref.</i> 301,306,307,489
Pleuronectidæ	495	Sole	318,321,495
Plotosus	<i>pref.</i> 325,496	Sorubium	325,326,496,497
Pomacentrus	362,487	Solea	495
Pomphret	<i>pref.</i> 307,308,490	Sparus	489
Pneumabanchus	330,498	Spirobranchidae	489
Polynemus	304,305,488,489	Sprat	<i>pref.</i> 318,319,494
Pristis	327,497	Squalus	327,497
Psilosomus	309,491	Square fish	<i>pref.</i>
Ray	<i>pref.</i> 326	Stromateus	308,490
Rhineodon	327,497	Strophidon	498
Rhynchobdella	308,489	Sucker	307,309
Ribbon-fish	<i>pref.</i> 307,490	Synaptura	495
Rohito	311,491	Systomus	310,313-315,492
Scate	<i>pref.</i> 327,497	Tœnioide	491
Sable-fish (printed Table-fish)	494	Tœnioides	491
Salmo	493	Thærodon	329,498
Salmon	493	Thryssa	319,494
Salmoninæ	493	Thynnus	307,489
Sardine	318,319,494	Torpedo	326,327,497
Saurus	493	Tortoise-formed fish	328,497
Saw-fish	<i>pref.</i> 326,327,497	Trichiurus haumela	490
Scartelaos	491	Triurus	493
Sciæna	303,487,488	Trigoninæ	327,497
Sciæninæ	488	Trichosoma	494
Scomberidae	489	Tunny	307,489
Scorpenidae	490	Turbot	<i>pref.</i> 318,321
Sea-porcupine	<i>pref.</i> 328,497	White fish	<i>pref.</i> 310,318,493
Setipinna	319,494	Whiting	<i>pref.</i> 301,303,487,488

Umber <i>pref.</i>	301,303,488	Zeinae	490
Unibranchapertura	330,498	Zygana	327,497

BURMESE.

ငါးဆိုက်	323,495	ငါးစည်	315,492
ငါးအုပ်ဇား	495	ငါးစည်ပူ	313,315,318,492
ငါးအုံးတုံး	311,491		493
ငါးကကတစ်	301,487	ငါးဆင်နာ	302,487
ငါးကာကုရုံ	305,489	ငါးတခွန်	309,490
ငါးကယော	307	ငါးတန်	322,495
ငါးကသလင်း	301,487	ငါးတတ်ဝဲ	327,497
ငါးကသမို	309,490	ငါးတောက်	326
ငါးကထို	492	ငါးထန်းရွက်	319,494
ငါးကထလူး	303,448	ငါးဝါးလွယ်	326
ငါးကြင်းစောက်	314,492	ငါးပိုင်း	306
ငါးကျေး	324,496	ငါးနှုသန်း	324,496
ငါးကြောက်ဝါး	328,497	ငါးနောက်သွား	323,495
ငါးကြောင်	325,496	ငါးနက်ပြာ	311,491
ငါးကွံတ္တပ်	489	ပရစ်ဗွီး	390
ငါးကွယ်င်	304	ငါးနီကလေး၊ i.e. ငါးပြန်နီကလေး	
ငါးခုန်	314,315,492		
ငါးပူ	325,496	ငါးနတ်ကတော်	303,488
ငါးခွင်း	316,317,493	ငါးပစုသော	318,493
ငါးခွေးလျှ	321,495	ငါးပတ်	324,496
ငါးစာဘွတ်*		ငါးပခူ	319,494
ငါးစင်း	304,309,488	ငါးပဗယ်	326
ငါးစင်းစတ်	301,308,487,490	ငါးပနော်၊ i. e. ငါးရနီပနော်	
ငါးစင်းမိုင်း	323,326,495,496	ငါးပလွေ	302,487

* A fish resembling mackerel. A species of *Lolurus*. *Savin*.

ငါးပါမောင်	308.490	ငါးမြစ်ရှင်း	312.491
ငါးပိန်းနဲဇေ	319.494	ငါးမြီးခဲ	315.492
ငါးပုဏ္ဏ	304.488	ငါးမြွေထို	308.489
ငါးပုတ်သင်	303.448	ငါးရင်	308.489
ငါးပုတင်း	228.497	ငါးရင်ပေါင်စာ	316.492.493
ငါးပြက်	448	ငါးရစ်မောင်	317.493
ငါးပေါက်တော	315.492	ငါးရတ်နီ	312.492
ငါးပြေထက်	301	ငါးရတ်ဝက်	313.492
ငါးပြန်	308.320.491	ငါးရား†	489
ငါးဗျာ	318.319.487.493.494	ငါးရန်	306.307.489
ငါးပြေမ	303	ငါးရောင်	322.323.326.495.
ငါးစခဲ	301.487		497
ငါးစန်းမ	492.313	ငါးရွေး	326.497
ငါးမယ်	320.494	ငါးရှဉ့်||	330.331.498
ငါးစရုနီ*		ငါးလင်ပန်း	329.497
ငါးစလူးခါ	318.493	ငါးလုံ	304.488
ငါးစောင်ရိုး	33.320.321.494	ငါးလိက်ကျောက်	327.497
ငါးဘွတ်၊ i. e. ပုတ်သင်		ငါးသံမှိတ်	324.496
ငါးမထုံ†		ငါးသလောက်	320.494
ငါးမန်း	327.497	ငါးသင်္ဘောပေါက်	331.498
ငါးမူ	308.490	ငါးသိုင်း	311.491
ငါးဗွတ်မိနီ၊ i. e. ချင်ဗွတ်မိနီ		ငါးဟောက်နံ	
ငါးမြင်း	322.324.325.495.496		

*A very large eel."—*Phayre*.

†An eel.—*Phayre*.

‡A name given sometimes to *Cybius lineolatum*.

||This name without an adjective is given to *Ophicardis Phayriana*, 331.498

§Therodontis, 329.498

MOLLUSKS.

Acalephs	422,504	Cephalopoda	499
Acinia	422,423,505	Cerithium	411.500
Achatina	401,501	Chiton	409.502
Ancillaria	499	Clam	406.504
Annelida	419,505	Clausilia	400.502
Anodon	401,503	Cockle	406.503
Anomia	502	Columbella	414.499
Arca	406,503	Conchacea	402.504
Ark-shell	406,503	Conch	413.500
Amnicola	403,501	Conchifera	502
Ampullaria	403,501	Conchology	397
Aplysia	410,501	Cone	414,499
Apple shell	403	Conus	414,499
Astrea	408,423,424,505	Coral	422.424,505
Asterias	422,505	Corallium	424,505
Aspergillum	404,504	Corbula	504
Auricula	404,501	Cowry	414,499
		Crassina	406
Basket-shell	405	Crooked trumpet	415,499
Beche-le-mer	421	Cucullae	407,503
Bivalves	502	Cuttle fish	415,499
Borers in tubes	404,504	Cyclostoma	399.400,501
Bubble shell	410,502	Cypræa	414,499
Barrowing shells	405	Cyrena	402,504
Buccinum	414,499	Cytherea	406,504
Balinas	400,502		
Bulla	410,502	Dolium	414,499
		Donax	406,504
Calyptræa	409.502	Dracunculus	420,505
Cancellaria	500	Dreissina	402,504
Caracolla	397.398,502	Dynamena	424,505
Cardium	406,503		
Cassidaria	413,500	Earth worm	419
Cassio	413.500	Eburna	499

Echinurachus	422,505	Melania	402,403,501
Echinus	421,505	Midas' ear	404,501
Echinoderms	421,505	Modiola	408,503
Eschara	423,505	Mollusks	499
		Monodonta	411,500
Fungia	423,505	Marginella	499
Frog-shell	412,500	Murex	412,500
Fusus	412,500	Muscle	401,406,503
		Mytilus	406,503
Gastrochœna	404,504		
Gasteropoda	502	Nanina	502
Giant shell	457,503	Nassa	414,499
Gordius	420,505	Natica	410,501
Guinea worm	419,505	Nautilus	415,499
		Nerita	410,501
Haliotis	410,500	Neritina	403,501
Hair worm	419,420,505	Nucula	467,503
Harp	413,500		
Harpa	413,500	Oliva	415,499
Helix	397-399,502	Octopus	415,499
Hirunda	420,505	Olive	415,499
Hogshead	499	Ostrea	489,503
Holothuria	421,505	Ovulum	414,499
		Oyster	408,409,502,503
Isis	423,505		
Ivory shell	499	Paludina	403,501
		Pandora	405,504
Leech	419,420,505	Patella	409,502
Land shells	397	Pearl Oyster	408,503
Limpet	409,502	Pecten	408,503
Lingula	409,502	Perna	408,503
Lithodomus	408,503	Periwinkle	410,500
Littorina	411,500	Petunculus	503
Loligo	415,499	Pholas	504
Lumbricus	419,505	Physalis	422,504
Lymnea	402,501	Pinna	408,503
		Placuna	409,502
Meandrina	423,505	Planorbis	402,501
Medusa	422	Pleurotoma	412,500
Meleagrina	408,503	Polyps	422,505

MOLLUSKS.

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Porites	423,505	Solarium	411,509
Portuguese man-of-war	422,504	Solen	405,504
Psammobia	406	Soletellina	406
Psammocola	406	Solenocurtus	405,504
Psammotœa	406,504	Spider	413,500
Pteroceras	413,500	Spirobis	420,505
Pterocyclos	400	Spirula	415,499
Pulmonigrade	422,504	Spatangus	421,505
Pupa	401,502	Spondylus	409,503
Purpura	500	Sponge	422,424
Purple shell	500	Spongia	424,505
Pyrula	412,500	Star fish	421,422,505
Quahog	406	Stomatella	500
Ranella	412,500	Streptaxis	399,502
Radiates	421	Strombus	413,500
Razor-shell	405,504	Succinea	401,502
Rhinoceros-head	413,500	Sun-fish	422
River shells	401	Tellina	405,504
Rotella	411,500	Tellinides	405,504
Scarabus	404,502	Teredo	404,504
Scallop	408,503	Terebra	499
Screws	411,500	Terebellum	499
Scutella	422,505	Thorny woodcock	412,500
Sea-anemony	422,505	Tongue shell	409
Sea-ear	410,500	Tower of babel	412,500
Sea-egg	421,505	Trachelipoda	499
Sea-hare	410	Trepang	421
Sea-jelly	422,504	Tridacna	467,503
Sea nettles	422,504	Triton	412,413,500
Sea-slug	415,421,505	Trochus	410,411,500
Sea shells	404	Trumpet	499
Sea-urchin	421,505	Tubipora	424,505
Serpent shell	419,420,505	Turbinella	500
Serpula	420	Turbo	411,500
Siphonaria	409,502	Turk's cap	410,500
Snail	397,399,501,520	Turritella	411,509
		Unio	401,503
		Vermes	419,505

Venus	406,504	Volute	499,
Venus's comb	412	Weaver's shuttle	414,499
Vitrina	502	Woodcock	412,500
Voluta	414,499	Worm	419,505

BURMESE.

ခရုထိုဇီ	403,501	တိ	419,505
ခရုကရုန်	411,500	နဂါခေါင်	412,500
ခရုကနုန်	413,500	ခရုနုစာ	407,503
ကဘုန်ထား	408,503	ခရုနှာမောင်းလိမ်	415,499
ကမာ	409,503	ပလုတ်	404,504
ကမာခရင်း	408	ပင်ဝန်း	401,407,408,503
ကမဲ	405,504	ပင်လယ်ပိ	421,505
ကျားလက်ထဲ	407,503	ခရုပုတ်	398,402,501
ကျွန်ခရု	403	ဝဲကွင်	408,503
ခရုကြောက်ရွာက်	405,408,	ခရုခိုင်ချေ	502
	503,505	ဘူရစ်	414,499
ကြောက်သင်္ဘော	421,504	ခရုမင်စား	405,504
ခရုကွက်	398,399,501	မျက်	406,504
ကျွတ်	420,502,505	ခရုမျက်လှန့်	410,501
ကျွေ	414,415,499	မျှော့	420,505
ခူ	422,504	ခရုယာ	403,410,411,500,501
ဥင်	406,503	လောက်ဘွား	401,503
ဥင်	407,503	ရေကြက်	415,499
ခရုစေ့လိမ်	399,411,500,501	ဂှိတ်	405,406,407,503,504
ဆင်နှာမောင်း	405,504	လယ်ခရု	403,501
ဆင်မျှော့	421,505	ခရုဝက်တောင်း	412,500
ခရုဖိစင်	403,501	ဝက်နား	406,504
ထင်	504	သင်္ဂီ	400,502
စာပို	409,502		

INSECTS.

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ချွတ်တီ	415,499	ချွတ်တီတက်	414,499
သတ္တဝါ	409,502	ချွတ်သံ	410,412,500,502
သတ္တိ	409,502	သင်္ဂ	419,505
သင်္ဂ	410,500	ချွတ်ပထို	415,499
ချွတ်သင်္ဂ	414,499	သင်္ဂ	403

INSECTS, AND CRABS.

Acaridae	396,511	Belostoma	389,509
Acheta	373,507	Black beetle	370
Achetidae	372,507	Blattidae	370,507
Acrydii	507	Blight	388,509
Egeriidae	383,508	Blister fly	367,507
Agelena	394,510	Bombardier	360,506
Ant lion	376,508	Bombyx	383
Ant	378,508	Bostrichidae	367,506
Aphaniptera	391,510	Brachinides	360,506
Aphrophora	388	Bug	389-391,509
Aphididae	388,509	Buprestis	364-366,506
Apidae	379,508	Butterfly	379-382,508
Arachnida	393,510		
Aranea	394	Caliphora	393,510
Arctiidae	384,509	Cantharidae	367,507
Astacus	417,511,512	Carabidae	359,506
Atlas beetle	362,506	Capricorn beetle	368,369,507
Auger beetle	367,506	Cassida	369,507
		Caterpillar	385,509
Bacteria	372,507	Cecidomyia	393,510
Balanus	418,512	Cecidomyioides	393,510
Barnacle	416,418,512	Centiped	396,511
Beckoner	416,511	Cerambycidae	369,507
Bee <i>pref.</i>	378,379,508	Cetonia	363,506
Beetle	359-370,506		

Centoniidæ	363,506	Elateridæ	366,506
Cercopidæ	388,509	Entomology	359
Chaffer	363,506	Epcira	394,510
Chameleon beetle	364,506	Euplexoptera	370
Chironomides	393,510	Eye beetle	361,506
Cicadidæ	386,509		
Cimex	389,509	Flea	391,510
Cicada	385,386,509	Fire fly	366,506
Cincindelidæ	359,506	Fly	393,510
Cleridæ	367,506	Floral beetle	367,506
Click beetle	366,506	Forficulidæ	370,507
Coccidæ	388,509	Formicidæ	378,508
Cocinella	370,507	Fulgora	387,590
Cockchaffer	363,506		
Cockroach	370,507	Gall insect	377,508
Coleoptera	506	Gad fly	392,510
Corcidæ	390,509	Gammarus	417,512
Cossyphus	368,507	Gauze-winged insects	376,508
Crab	416,418,511,512	Gecarcinian	511
Crane-fly	392,510	Gelasimus	416,511
Crayfish	416,417,411	Geometrician	384,509
Cricket	372,507	Geometridæ	384,509
Crustaceology	416	Geotrupes	361
Crustaceans	416,417,511	Gerris	389,509
Culicidæ	392,510	Glow-worm	366,506
Curculionidæ	368,507	Gnat	391,510
Cynipidæ	377,508	Ground beetle	359,506
		Grasshopper	373,507
Damsel fly	376,508	Gryllidæ	507
Dermaptera	370,507	Grub	368,507
Diptera	391,510	Gyrinidæ	360,506
Diver	506		
Diverse-winged insects	509	Hammaticherus	368
Diving beetle	360	Heteroptera	388,509
Dolomedes	395,510	Histeridæ	360,506
Dragon fly	376	Homoptera	485,509
Dynastes	362,506	Hornet	378
Dytiscus	360,506	Horse-stinger	376
		Hotina	397,509
Earwig	370,507		

Hymenoptera	376,508	Mygale	395,510
Ibla	418,512	Mylabris	367,507
Ichneumon fly	377,508	Myrmeleonidæ	376,508
Ichneumonidæ	377,508	Myriapoda	396,511
Insects	506	Nerve-winged insects	507
Julus	396,511	Neuroptera	507
Lac coccus	388,509	Noctuidæ	384,509
Lady-bird beetle	370,507	Notonectidæ	509
Lampyridæ	366,367,506	Nymphalidæ	382,508
Libellulidæ	376,508	Ocypoda	416,511
Lantern fly	387,509	Oniscus	418,512
Lice	387,509	Orbiteles	394,510
Lepidoptera (Butterflies)	508	Ornithoptera	381,508
Like-winged insects	509	Orthoptera	370,507
Limulus	418,512	Pagurus	418,512
Locust	373,507	Petalycocera	361,506
Locustaria	507	Phalæna	383,509
Locustidæ	507	Phantom insect	371,507
Long-legs	392,510	Phasmidæ	371,507
Longicorne	507	Phyllium	372,507
Longicornes	369,507	Pierides	382,508
Lucanidæ	361,506	Pieris	381,508
Lycosa	394,510	Platyonychus	416,511
Lygæidæ	391,509	Pontia	382,508
Mantis	370,507,512	Prionidæ	368,507
Melipona	379,508	Palicidæ	391,510
Melonthidæ	363,506	Reduviidæ	390,509
Blidge	393,510	Rose chaffer	363,508
Milleped	396,511	Salticus	394,510
Mimic beetle	360,506	Sarcophaga	393,510
Mosquito	391,510	Saturnia	383,384,509
Moth	382,383,508,509	Scale-beetle	368,507
Muscidæ	393,510	Scarab	361,362,506
Mutillidæ	378,508	Scarabæus	361,-363,506
Musk beetle	369,507	Scolopendra	396,511

Scorpion	393,395,510,511	Tipulidæ	392,510
Scutelleridæ	389,390,509	Tortoise beetle	369,507
Scorpio	395,510	Truxalis	373,507
Sea-mantis	416,418	Two-winged insects	391
Shrimp	417,512		
Silkworm	382,509	Vagabonda	394,510
Skin-winged insects	370	Vespidæ	378,508
Snouted beetle	368,507		
Sow bug	416,418,512	Walking-leaf insect	371
Soothsayer	370,507	Water beetle	360,506
Sphegidae	377,508	Water boatmen	388,509
Sphingidae	382,508	Water skipper	389,509
Sphinx	382	Wasp	377,378,508
Spider	393,-395,510	Weevil	368,507
Squilla	418,512	White ant	374,507
Stag beetle	361,506	Woolly-bear	384,509
Straight-winged insects	370	Woolly-blight	388,509
Termitidæ	376,507	Xylocarpus	378,508
Tick	395,511		
Tiger beetle	359,506	Yponomeuta	385,509
Tipulidæ	392,393,510	Yponomeutidae	385,509

BURMESE.

တနန်း	416,511	မြင့်	392,510
ကင်း	396,511	မွေးလေး	391,510
ကင်းမြီးကောက်	395,511	ရှင်	390,509
ကပ်*	418,512	တောပင်ရ	795
မြို့ရွေး	382,506	နှံမောင်	371,373,507
ကျွမ်း	389,508	ပင်း	376,508
ကျွမ်း	361,508	ပစ္စန်	416,417,511,512
ခရင်း	418,512	ပရံ	378,508
နတ်	376,507	ပရံ	377,508
နွယ်	388	ပရံကိမိတ်	378,508

*The Limulus,

REPTILES.

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ပန်ကူ	394,395,510	ဗွား	379,508
ပန်ခွတ်	418,512	ဗျိုတ်	391,510
မိုး	383,509	မှတ်	392,510
မိုးမိန်း	367,506	မွား	396,511
မိုးစောက်ထိုး	392,510	ယင်ကောင်	393,510
မိုးမဲတောင်တာ	364,506	ရေထိုး	389,509
မိုးထောက်ထန်း	392,510	လိတ်ပြာ	381,382,508
မိုးယတ်	370,507	လိတ်ပြာကြီး	384,509
မွဲရက်	379		

REPTILES.

Acrochordus	353,515	Coluber <i>pref.</i>	343,345,348,
Alligator	<i>pref.</i>		349,352-357,515
Anguis	351	Cophias	349
Argyrophis	351	Crocodile <i>pref.</i>	335,336,513
Aspidoclanion	541	Crocodylus	336,513
Batrachia	517	Dilophyrus	341,514
Blood-sucker <i>pref.</i>	341,514	Dipsas	355,515
Blind worm	350,515	Draco	341,342,514
Boa	344,345,351,352,356	Dracunculus	341,342,514
Bothrops	349	Dryinus	354,355,515
Bungarus	344,345,516	Dryiphis	355
		Dryophis	355
Cæcelia	357,517		
Calotes	341,514	Elaps	343,356,516
Caretta	335	Emys	334,513
Cerberus	356,357	Enhydrus	356,357
Chameleon	<i>pref.</i> 341	Erpetology	333
Chelonia	335,513	Erpeton	356
Cistudo	334,513	Eryx	351
Cobra	346,516	Eumeces	343

Euprepis	333,343,515	Naja	346,348,516
Frog <i>pref.</i>	357,358,517,	Natrix	355
Gymnopus	334,513	Ophidia	515
Gecko <i>pref.</i>	336-338,514	Passerita	355
Guana	341	Platydictylus	337,339,514
Hamadryad	345,346	Polypedatus	358,517
Hamadryas	345,346,516	Potamophis	356,357
Helicops	356	Pseudoboa	344,345
Hemidactylus	338,514	Pteropleura	339
Herpetology	333	Pseuderyx	356
Homalopsis	356,357,516	Ptychozoon	338,514
Hurria	356	Pythou	351,352,356,515
Hydrophis	349	Rana	358,517
Hydrep	356	Reptiles	513
Hydrosaurus	339,514	Rhinopirus	356
Hydrus	349,350,356,357, 516,517	Rufo	358,517
Hypsirhina	356,357	Salamandra	335
Hyla	358,517	Sauria	513
Iguana	341	Saurians	513
Kinosternon	334	Scincus	343
Lacerta	335,338,342,343, 514	Scink	342,515
Laticauda	349,517	Serpent	343,350,515
Leiolepis	342	Slow-worm	351
Le Lombrie	350	Snake	503
Leptophis	516	Stellio	335
L' Orvet lombric	351	Terrapene	334
Lizard	341,342,514	Terrapiu	334,513
Lycodon	353,515	Testudo	333,335,513
Mabouya	343	Tiliqua	343
Munitor	339,514	Toad	<i>pref.</i> 358
		Tortoise	333-335,513
		Tortrix	351
		Tortue	334,335
		Toukta	336

REPTILES.

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Tragops	355	Varan	339-341,514
Trigonocephalus	349,516	Varanus	339-341,514
Trimereasurus	349	Viper	348,516
Tropidonotus	355,356,516	Vipera	343,348,349,516
Typhlops	350,351,515	Xenodon	515
Turtle	334,335,513		
Uromastix	342		

BURMESE

အိမ်ကျွတ်မြွေ	353,515	မြစ်ချောင်းမြွေ	355,356,516
အိမ်မြွေ	338,514	မြွေမိန်း	349,515,516
ကနကုတ်	515	မြွေမိန်းမီးရှည်	355,515
ကုလားတောက်	353,515	မြွေဆင်ဖျက်	351,515
ကျွတ်	349,516,517	မြွေပွေး	348,519
ကြက်စွန်းမြွေ	515	မြွေသားရှားအေး	344,516
ငန်း	344-346,515,516	မြွေဟောက်	348,516
ခေါက်ကြီး	352,515	ရက်ကန်းကြီးမြွေ	355,515
တောက်ထုံ	337,514	ရေမြွေ	357,516
ပဒတ်	342,514	လိတ်	333-355,513
ပုတ်သင်	341,343,514,515	လင်းမြွေ	353,354,515
စား	358,517	သင်းချော	343
မွတ်	339-341,514	သင်းလိတ်	515
မိကြောင်း	336,513	သာမီချောက်ထောင်	357,517
မြစ်ရောင်းမြွေ	355,356,516		

BIRDS.

Acanthylis	530	Benteot	271,526
Accipiter	253,519	Bhinga	259,522
Acridotheres	272,526	Bhuchanga	259
Adjutant	<i>pref.</i> 295,532	Bittern	295,532
Agrodroma		Boatswain-bird	300
Alda	274,527	Brachypodius	262
Alcedo	284,530	Brachyurus	263,524
Alcemerops	283,529	Broad-bill	370,526
Alcippe*	688	Bubo	255
Amadina	273,527	Buceo	279,280,528
Ampeliceps	272,527	Buceros	275,527
Anastomus	296,533	Budytes	268,525
Anous	300,534	Bulaca	522
Anser	298,534	Bulboul	260-263,523,524
Anthipest	688	Bunting	274,527
Anthus	268,269	Buteo	252,516,520
Aquila	252,519,520	Buzzard	252,520
Anthreptes	282,529	Calanias	293,532
Arachnothera	281,529	Calornis	273,527
Arboricola	290,531	Campephaga†	
Ardea	293,294,532	Carpophaga	291,531
Argala	295	Caprimulgus	285,530
Argus	289,531	Capito Vieill||	
Astur	253,519,520	Centropus	281,528
Athene	256,522	Cerchneis	518
Babbler	264,265,524,525	Certhia§	281,-283,529
Barbet	279,280,528	Ceyx	284,530
Bee-eater	283,529	Chatterer	269,525

*After *Sorapus* on page 526, add *Alcippe Phayrei*, Blyth.

†After *Muscicapula* on page 526 add *Anthipes gularis* Blyth.

‡After *Tophredornis* on page 543, add *Campephaga*, Vieill; *Colaptes* Cuv. C. *melanoptera*, Blyth, Caterpillar-catchers.

||A synonyme of *Buceo*

§On page 529, add *Certhia flammarillaris*,

Chalcophaps	292	Cyrusses	pref.
Cibitia	258,260	Demi-egret	294,532
Chloropsis	262,524	Demigretta	294,532
Chippuck	519	Dendrocygna	298,533
Clorisoma	263	Dendrocitta	271
Chrysococcyx	281,528	Dendrophila	280,528
Chrysonotus, <i>Swain*</i>		Dendrocopus	278,279,528
Ciconiat	295,532	Dentirostres	256,522
Circæetus	518	Dicaeum	282,283,529
Cinnyris	282	Dicrurus	258,259,528
Circus	253,518	Dove	292,532
Cissa	263,524	Duck	298,533
Collocalia	288,530		
Columba	292,531,532	Eagle	pref. 252,519
Conirostres	270,526	Edolus	258-260,523
Coot	296,533	Emberiza	274
Coracias	271,284,529	Enicurus	268,525
Corapica	263	Ephialtes	521
Cormorant	299,534	Erpornis	267,525
Corvus	260,270,526	Eudynamys	280
Corydalla	268,269,525	Euplectes	273,527
Corydon	270,526	Euplocamus	269,531
Cassyrhus griseus <i>Dum†</i>		Eurylaimus	270,526
Crane	296	Eurystomus	284,529
Creeper	281,525	Euspisa	274,527
Criniger	260,262,524		
Crypsirina	271,526	Falco	253,254,518-520
Crane	pref. 296,533	Fairy bird	525
Crow-pheasant	281,528	Falcon	253,254,518
Crow	270,526	Finch	273,527
Cuculus	258,280,528	Fissirostres	288,529
Cuckoo	255,280,281,528	Fly-catcher	269,525,526
Caltrunguis	522	Fowl	289,531
Curlew	297,533	Fringilla	273
Cymbirhynchos	270,526	Fulica	296,538
Cyornis	267,525		

*A synonyme of *Tiga*,†*Ciconia umbellata*, (295?)‡A synonyme of *Acridotheres ginginianus* on page 526

Gallinaceous Birds	288,530	Hoopoe	288,520
Gallinula	296,533	Horabill <i>pref.</i>	274,275,527
Gallus	289,531	Humming bird	281
Gampsorhynchus	291,531	Hypsipetes	262,263,524
Garrulax	264,265,524	Hydrochiledon	300
Geophilus	293		
Gecinus	528	Ibis	296,533
Geocichla	264	Iamprormorpha	281
Goatsucker	<i>pref.</i>	Iora	265,524
Goose	298,534	Iolet	700
Goshawk	253,519	Irena	266,525
Goura	293		
Gracula	260,271,272,526	Jay	283
Grallatores	293,532		
Grus	296,533	Kestrel	252,518
Gull	<i>pref.</i> 300,534	Ketupa	255,521,522
Gyps	521	King-crow	259,523,528
		King-fisher ii,	284,530
Halcyon	284,530	Kite	252,254,520
Haematornus	260,518		
Haliastur	520	Lanius	256-258,260,522,523
Harpactes	285,530	Lark <i>pref.</i>	269,274,525,527
Harrier	253,518	Larus	300,534
Hawk	253,254,255,518-520	Leptoptilas	295
Hemipus, <i>Hodg.*</i>		Limnaetus	519
Hemixas	263,524	Loriculus	277,528
Hen	<i>pref.</i> 290	Lonchura, <i>Sykes†</i>	
Heron	<i>pref.</i> 293,294,532	Lorikeet	277,527
Heteromorpha	263,524	Loxia	238
Hierax	518	Loxigilla, <i>Less†</i>	
Himantopus	297,533	Lyncornis	285,530
Hirundo	285,286,288,530	Magpie	270,526
Honey-sucker	281,529	Malacocincla	265,524
Haematornis	518	Mango bird	266,525

*After *Muscicapula* on page 536 add,

Hemipus, *Hodg.*

" *Picata*, *Sykes*

Muscicapa tyronides, *Tickell.*

" *hirundinacea*, *Jer.*

†After *Hemixas* on page 524 add, *Iole virescens* *Blyth.*

‡A synonyme of *Amadina*.

Meiglyptes	278.528	Oriolus	266.525
Meleagris	289.531	Ornithology	251
Melanosterna	300.534	Ortolan	274
Melias	280.528	Orthotomus	267.525
Merops	283.529	Osprey	252.520
Merula	264.524	Otogyps	- 521
Microlaptes	279.528	Otus	521
Micropternus	278.528	Owl	255.256.521
Milvus	252.520	Oyster-catcher	297.533
Micronisus	518		
Moltacilla	265.267.268.525	Paddy-bird	293.532
Munia	273.527	Palæornis	275-277.527
Muscicapa	260.269.525.526	Paludicola	263.524
Muscicapula	269.526	Pandion	225.520
Muscitrea*		Perdix	290.531
Mynah	271-273.526.527	Paradoxornis, Blyth†	
		Parrakeet	275.276.527
Natatores	298.533	Partridge	290.531
Nectarinia	282.283.529	Passer	273.274.527
Nemoricola	268.525	Pastor‡	272.526
Nightjar	285.530	Pavo	288.530.531
Niltava	267	Peacock	pref. 288.530
Ninox	522	Pelican	299.534
Nisaelus	519	Pelicanus	299.534
Nisaster	253.519	Pericrocotus||	260.523
Nisus	519	Petrocincla	264.524
Noctua	256.522	Phalacrocorax	299.534
Numenius	297.533	Phasianus	289.531
Nuthatch	280.528	Pheasant	289.531
Nyctiardea	294.532	Phodilus	522
Nycticorax	294.532	Phaeton	300.534
		Phaenicornis	260
Open-beak	296.533	Phyllornis	262.524
Oriole	266.525	Phenotrix	271

*After *Muscicapula* on page 526 add, *Muscitrea cinerea*, Blyth.

†A synonyme of *Heteromorpha* 263.524

‡Add, on page 526 *Pastor peguanus*, Less.

§Add on page 523

Pericrocotus speciosus, Blyth.

Turdus " *Lath.*

Muscipeta princeps, Vigors, Gould.

Phylloscopus	267.525	Rollulus	299.537
Pica	270	Rosy-red bird	260.523
Picus	277.279.528		
Pie	271.526	Sand-piper	297.533
Pigeon*	290.291.531 532	Sasia, Hodg.†	271
Pipit	268.525	Satin crow	266.525
Pitta	263.524	Saxicola	275 527
Plectropterus	298.533	Scansores	300.534
Plotus	299 534	Scissors-bill	297.533
Plover	297.298.533	Scolopax	256.521
Pluvianus	297.298.533	Scops	299 300.534
Polyplectron	288.531	Sea-swallow	270.526
Poliornis	253	Serilophus‡	280
Pomatorhinus	265.524	Sheer-water	269
Prinia†		Shrike	256-258.522.523
Psilorhinus	270.526	Sitta	280
Psarisomus. see Raya		Snake-bird	299.534
Psittaca	276 277.527	Snipe	297.533
Psittacus	275-277	Snippet	297.533
Pycnonotus	269 261.523	Sornium	522
Pyrgita	273	Soropus	269.525
Quail	299.531	Sparrow	273.274.527
Rail	296.533	Sphenurus	291
Rallus.	296 533	Spizaetus	519
Raptores	251.518	Stachyris	267.525
Raya‡		Starling	271.526
Razores	288.530	Stonechat	266.525
Rhipidura	269.526	Strepsilus	297.533
Rhynchops	300.534	Strix	255.521.522
Roller	283.529	Sterna	273.299.300.534

*What is called by English Sportsmen in India "Rock Pigeon" is no Pigeon at all, but a game bird approaching to a Grouse.—*Phapre*.

†After *Orthotomus* on page 525 add:

Prinia inornata,
" *rufescens*, Blyth.

‡After *Serilophus* on page 526, add,

Raya stricogula, Hodg.
Psarisomus Dalhousie, Swain.

§A synonyme of *Microleptes*.

¶Add on page 523. *Serilophus rubropygius*.

BIRDS.

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Sterna	272.526	Tricophorus	262.524
Sturnus	271.526	Tringus	297.533
Suctorial birds	281.529	Trogon	279.258.528.530
Sun-birds pref.	281.282.529	Tropic-bird	300.534
Swift	286.530	Turdoides	262.524
Swallow	285.286.530	Turdus	263.264.272.524
Swan	pref.	Turkey	289.531
Swimming birds	298.533	Turnix	290.531
Sylvia	267	Turnstone	297.533
Syrnium	522	Turtur	292.293.532
Tailor bird	266.525	Ulula	522
Teal	298.533	Upupa	283.529
Tenuirostres	281.529	Vulture	251.521
Tenthaca	258	Vinago	291
Tephrodornis	258.523	Wading birds	293.582
Terax	253	Wagtail	268.525
Tern	299.300	Warbler	266.267.525
Thrush	263.264.524	Water-hen	296.533
Thalaseus	399.300.534	Wide-mouthed birds	283.529
Tiga	279.528	Weaver bird	273.527
Tigrisoma	295.532	Woodpecker	277-279.528
Timalia	265.525	Zanclostomus	280.528
Tinnunculus	518	Zoothera	264.524
Tooth-billed birds	256.522	Zosterops	266.525
Toria	291		
Totanus	297		
Treron	291.531		
Trichastoma*			

BURMESE

ဆင်ကကြီး	254.520	ဥရောင်	238.530
အိန်စာ†		ဥရောင်	280.529
အောက်ချင်း	275.527	ကျွန်းကုန်း	270.526
အောရော	299.534	ကျွန်းကုန်း	271

*After *Erpornis* on page 525, add
Trichastoma Abbottii, Blyth.

†*Passer indicus*, and *P. montanus* 223,274,527

ကြက်	289.531	ငှက်ထောင်	258.259.523
ကြက်တူရွေး	275	ငှက်မင်းသား	260.523
ဆွဲမြီးဆွဲ*		ငှက်မင်းသမီး	260.523
ထူလား	276.527	ငှက်မိမိ	524
ကျေး	276.277	ငှက်ဝါ	266.525
ကျက်တော	527	ငှက်ဖျားစပ်	266.525
ကျေးသတ	277	ငှက်တလိုင်း	279
ကုပ်ခလောင်	279.528	ငှက်သစ်တောက်	278.528
ကျက်ဆင်	289.531	ငှက်ပန်တိန်	279.528
မြီးကြာ	296.533	ငှက်ပစင်းတိုး	283.529
ကလူကွတ်	296.533	ငှက်ခါး	284.529
ကုလားကောက်	297.533	ငှက်ပြင်း	285.530
ခင်ပုတ်	255.522	ငှက်ငနွား	294.532
ဆွန်းထိုး	277.528	ငှက်ကြီး	295
ခါ	290.531.532	ငှက်ဆတ်	270.296.526
ရှိုး	292.293.531.532	ခပ်ရင်ကျား	268.525
မို	292.532	စထုံတူ	269.526
မြိရိုင်း	294.532	စာ	273.527
ခရုစုတ်	296.533	ခပ်လိ	298.533
ချည်ခင်စွပ်†		စာပေါင်သောင်	273
ရှိုး	292.531	စွန်	22.5254.520
ငဟစ်	294.532	ဆင်မိန့်ညင်း	284
ငန်း	298.534	ဖရက်	271.272.526
ငုံး	290.531	ဖရက်မောက်တင်	272
မူ	291.531	ဖိုးကွက်	256.521.522
ငှက်ဆိုး	255.522	ဖိုးမိုး	288.530

*A name given to the King Crow, 259,523

†*Giconia umbellata*,

ဇင်ရော်	297.533	ပန်းပွင့်စုတ်	281.282.529
တိုင်ကား	269.526	ဖျားတူးငှက်	283.529
တောင်ပီစုတ်	283.529	မိန့်ညင်း	284.530
တောကြက်	289	ပန်းကြိုး	284
တုံးစပ်	295	ပန်ညင်း	284
တီးတုတ်	255.523	ပြန်ထွား	285.530
တိတ်ခူ	297.532	ပျိုးမတီး	291.531
တောခါ *		ပင်လယ်ကျက်တူရွေး	300
တောဝပ်ပဲ	298	ပင်လယ်မျှင်ငှက်	300.534
တင်ကြိုး	299.534	ဖိုးကောင်	279.528
တုတ္တရ	235.530	ဗုတ်	281.528
မိန့်ညင်း	284.530	မြိုင်း	293.294.532
ဖောင်း	233.518.530	ဘုမ္မတီး	291.531
ဖောင်းငြိနှောက်	253.518	ဘွတ်	523.524
ခုံးစပ်	295.532	မြေပုန်	263.524
ခုံးမြီးကွက်	295.532	မြေငုံး	263.524
ခုံးကုလာ	295.533	မြီးငေါက်	263.525
နှစ်ဖျား†		မြီးညောင်	268.525
နှံပြည်စုတ်	267.525	မိုင်းနုကြိုး	283
ပုတ်မင်နီ	260	မိုင်းကောင်းငှက်	284.529
ပုတ်ဆီကူ	260	မြေဝတ်	285.297.530.533
ပုတ်ဝါ	261	မိုင်းရွှေငှက်	285.530
ပုတ်ဝါမောက်တင်	261	မြေဝတ်	287
ပိုင်းတန်သယ်	262.524	မြေလူးငှက်‡	
ပုတ်	260-262.523.524	မိန်းမလက်သဲ	299.300.533

* *Amadina striata*, and other field sparrows, 273, 527† *Ciconia umbellata*.‡ *Turdus rufinus*, 263, 594

မြစ်လွှဲ	299.534	ဝဓိဝ	298.533
ယောင်ယင်	275.527	ဝါဇလေး	280.528
ရဟတ်	268.525	ဝံ့ဗို	299.534
ရစ်	289.531	ဝံလက်*	252.254.520
ရေကြက်	293.296.532.533	ဝံလို	252.519
ထယ်ခြား	266.524	လွေးရှည်	265.524
ထက်ခွား	266	သိန်	253.518.519
ထင်းတ	251.521	သဒ္ဒတ်လွယ်†	268.525
ထင်းဝက်*		သာလိကာ	271
စရောင်းငှက်	• 264.524		

MINERALS.

Acidiferous alkaline minerals	32.539	Amber	58.542
Acidiferous alkalino-earthly minerals	33.539	Amygdaloid	7
Acidiferous earthy minerals	29.538	Amethyst	20.26.535.537
Adularia	33.539	Anthracite	55.542
Agate	19.21.22.536	Andalusite	11.35
Alkalino-earthly minerals	33.539	Antimony	<i>pref.</i> 49.542
Alabaster	29	Arragonite	30.538
Almandine	23.27.536.537	Arsenic	<i>pref.</i> 48.50.51.542
Alum	14.33.539	Asbestos‡	537
Alluvium	1	Augite	25.537
Ammonia	32.539	Ava gem-sand	27
		Balas ruby	27
		Beryl	27.28.34.538
		Bismuth	<i>pref.</i> 40.50.541

*A name sometimes given to the Night-heron, 294.533

†“This name is given in Arracan to the Dial, *Corymbus*; from the supposed resemblance of the black mark on the breast, to a Buddhist Priest's begging dish, the-piak, suspended from his neck.”—*Phlegma*.

‡Asbestos has been found near Tani-gais opposite Ava.—“Fine silky white mineral, crystallized on silicious Molemate.”

Bloodstone <i>pref.</i>	22,536	Diorite	3
Bluestone	39,541	Dolomite	30,538
Blende	48	Dolerite	25
Borax	32,539		
Black wad	48	Emerald	26,52,537
Brick earth	25,537	Emery	27
Breccia	5,8,11,13	Earthy minerals	19,535
		Epsom salt	18
Cacholong	21,535		
Carbuncle	23	Fault	14
Carnelian <i>pref.</i>	18,21,22,536	Felspar	33,539
Cat's eye	20,33,52,583	Flint	20,535
Ceylonite	27,538	Fluor spar	31,538
Chalcedony	19,21,22,535	Fossils	8
Chalcedonyx	21,536		
Chalk	30,537,538	Garnet <i>pref.</i>	23,26,27,536
Chlorite	10,13,34,44,539	Galena	39,541
Chloride of sodium	32,539	Glauber salt	18
Citrine	20	Gneiss	5
Chiasolite	11,19,35	Gold	12,36,39,540
Clay	10,14,15,24	Gem-sand	27,538
Clayslate	5,6,9,10,11,12,15,16,23	Granite i.	1,-3,5,6,9,14-16,18
Claystone	10,24	Grauwacke	1,4,10,12,13
" porphyry	4,10,12 13,14	Greenstone i.	3,5,9,11,12,15,25
Cinnabar	37,540	Grit	8,30,36,538
Coal	15,56,542	Gypsum	8,14,31,538
Conglomerate	5,7-9,12-15		
Combustible minerals	52,542	Heliotrope <i>pref.</i>	22,536
Copper <i>pref.</i>	19,38,540,541	Hematite	42
Corundum	26,537	Hornblende*	3,25,537
Coral	52	Hypersthene	25,537
Crystal	19,535	Hornstone	21
Copperas	10,43,541	Hot springs	16,17
Diamond	19,28,34,52,540,542	Indicolite	35,540
Diluvium	1,8,12	Igneous dykes	4,10

*Col. Pursey sent specimens from Ava of "dark green prismatic hornblende; obliquely hexahedral with rhomboidal cleavages."

Iron	9,10,12,13,24,39,40,42,43,541	Natron	<i>pref.</i> 62,530
Indian red	42	Nitrate of potash	32
Jasper	<i>pref.</i> 22,23,536	Nitre	32,539
Lead	<i>pref.</i> 8,19,39,40,541	Ochre	6,16,42,541
Laterite	6,9,12,15,16,24	Onyx	21,22,535
Lignite	8,12,15,56,542	Orpiment	51,542
Lime	29,39,538	Opal	33
Limestone	iii. 1,4,7,10,13,14,15,16,29,30,31,538	Onchus	13
Lithographic stone	30	Petroleum	58,542
Loadstone	40,541	Pewter	<i>pref.</i>
Loam	25,537	Platina*	36,540
Maale	11,35,540	Pearl	52
Malachite	38,541	Pleonaste	27,538
Manganese	19,48,542	Potash	<i>pref.</i>
Marble	29	Porphyry i.	
Marl	30,538	Potstone	34
Magnesia	39,30	Primitive	1
Mercury	37,540	Prase	i. 20,535
Metaliferous minerals	36,540	Pudding stone	6,12
Mica	<i>pref.</i> 6,11,15,16,33,539	Pyrites	9,10,40
Minerals	535	Pyrope	23,52,536
Minium	40,541	Quartz	i. 3,4,5,7,9,11,12,19,20,535
Mineralogy	19	Quick silver	37
Millstone-grit	8	Realger	51,542
Molybdena	49,50,542	Reddle	25,537
Moon-stone	33,539	Rubelite	35,540
		Rubicelle	27,537

*Platina ore is found in the neighborhood of Ava. Col. Burney wrote :

"I find that a good deal of the platina ore is brought from some mountain torrents or small streams, which fall into the *Kyendwee* river from the westward, near a town called *Kansee*; and it is collected in a very curious manner, as Mr. Lane is informed, although he hesitates to believe the fact. The horns of a species of wild cow in this country called *T'szin*, perhaps the same as the *Nylgas* of India, have a velvet coat before the animal reaches the age of two or three years: a number of these horns are taken and fixed in the beds of the small streams, and at the close of the rainy season, when the water subsides, a cloth is put down over each horn separately; and the horns, and cloth as well as a portion of the sand around it, are taken up together. The horns appear to collect around them a good deal of gold dust, which the streams have washed down, and with this dust grains of platina are found mixed.

Ruby <i>pref.</i>	19,23,26,27,52,537	Stratified rocks	5
Sal ammoniac	32,539	Succin	58,542
Salt	32,539	Succinum	58,542
Sandstone	1,4,-6,8-12,15,16	Sulphar	17,39,50,52,542
Saltpetre	<i>pref.</i> 32,539	Syenite	• 3
Sapphire	20,26,52,537	Talc	<i>pref.</i> 33
Sard	21,535	Tertiary	1,8,13
Sardonyx	21,536	Tin	<i>pref.</i> 12,43,541
Schorl	1,3,34,539	Tincal	32,539
Selenite	31,538	Topaz	26,35,52,537
Serpentine	<i>pref.</i> 28,538	Terebratula	8,11
Shale	4,8,11,13-15,24,536	Tourmaline	34,35,539,540
Sheenthan	<i>pref.</i>	Tremenheerite	9,19,52,542
Silver	19,37,38,39,540	Trap	7
Silicum	3	Tufa	17,30,538
Silica	39,41	Thermal springs	16,17
Silex	6	Tungsten	51,542
Slate	11,12,14,24,536	Unstratified rocks	1
Soap	32		
Soapstone	34,539	Vermilion	37,541
Soda	<i>pref.</i> 32,539	Vitriol	39,541
Spar	30		
Spinnelle	27,28,537,538	Wolfram sand	51
Spanish brown	42		
Stalactites	29,538	Zinc	48,542
Stalagmites	29,538	Zircon	28,538
Steatite	34,539		

BURMESE.

အကျတ်	34,35,539,540	ကန့်ကူဆံ	34,539
အနွီကူ	30,538	ကျောင့်	20,33,52,535
အပြိုက်	34,539,540	ကျေး	38,47,540
ဥသုဓဓာ	26,35,52,537,540	ကြက်သွေး	22,536,539
ကျောက်ကြွေဇာ	40	ကြေးမြို့	47
ကပ်ကျောက်	7	ကျွတ်	40,541
ကန့်	52,542	ကျွေ	6

ကျောက်ခရိုင်	20,535	နဝရတ်ဇပါးနာမည်	52
ကျောက်ချည်	33,539	ကျောက်နီ	23,27,536,537
ခဲပုတ်	39,541	နီလာ	20,26,27,52,535,537,
ခဲမ	47,542		538
ခဲမပုတ်	39,541	နှားကျောက်	2
ခဲမသေ	51,542	ကျောက်နှံထတ်	3,5
ဂေါ်တံ	19,535	ပတ္တမြား	27,52,537
ဂေါ်ဇေ	23	ပဗ္ဗိး	540
ဂေါ်မုတ်	23,52,536	ပဒဲကျောက်	23,536
ငွေ	28,540	ပန်ရည်	23,537
ငွေကျောက်	42	ပရင်း	58,542
ကျောက်စက်	29,538	ကျောက်ပလဲ	34,539
ကျောက်မိန့်	23,528	ပုလဲ	52
မိန့် 28,35,51,52,538,540,542		ပြဓါး	37
မိန့်မြဲ	51,542	မနိကျောက်	19,535
မိန့်ပလုပ်	19,535	ကျောက်ဖုံ	6
မိန့်သွေးကျောက်	27,537	ကျောက်မြို့နု	29,538
မိမြို့ကုံ	23,27,536,537	ဘာလဒုတ္တာ	38,39,43,541
ဆုန်း	40,541	ဘော်	38,540
ဆေးဖန်း	51,542	ဘော်နင်းကျွတ်	40
ဆေးဖန်းရွှေဝါ	51	ဗတန်	40,541
အဝက်သာ	32,539	မဟာဆတ်အဝါ	22,536
ကျောက်တမင်စောက်	40	မဟူရာ	21,22,535,536
တေလေကျောက်	50,542	မီးခပ်ကျောက်	21,535
တောင်မိုကျောက်	8	ကျောက်မီးသွေး	56,542
ထုံးကျောက်	29,538	မောရဂီဝါငွေစားကျောက်	38,
ဒုတ္တာ	39,541		540
နဂါးဆွဲ	22,23,536		

မောရဂါဝါကျေးနီစားကျောက်	သဒါ	52	
	38,540	ကျောက်သလင်	19
မြ	26,52,537	ကျောက်သလင်ဂေါတံ	31,538
မြင်းသီလာ	51,542	သင်တွဲမိန့်ကျောက်	23,536
မြေဆပ်ပြာ	32,539	သံ	541
မြေနီ	25,42,537,541	သံကျောက်	42,541
မြေဖြူ	30,538	သံဖြူ	47
မြောက်ဩကျောက်	43	ကျောက်သံစား	541
မြိုင်မိန့်	19,535	သံတိုက်ကျောက်	40,541
ရေနံ	58,542	သံလိုက်ကျောက်	42,541
ရုန်းမိန့်	32,539	သိန္ဓောဆား	32,539
ရွှေ	37,540	သိဟ်မိန့်	28,34,35,538,539,
ရွှေသွေးကျောက်	27,537	-	540
လခြေ	33,539	သွပ်	48,542
လက်ချား	32,537	ကျက်သွေး	22
လုံလုံ	11	ဟင်္သာပဒါးရိုင်း	37,540
သလွဲ*			

NATIONS.

Besunga	427	Mareura Emporium	445
Burmese	425,444	Mouns	425
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Kemees	425		
Khukeens	425	Ophir	427
Kyens	425		
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Maulmain	437,440,441	Pegu	429,436,438,463

*Lead, the classic name.

Peguans.	425	Sgaus	477
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Selungs*	425, 472	Toungthus	425, 442

CORRIGENDA.

page 477	for Canaines	read Cariaines.
" 482	" Insectivora	" Insectivora.
" 489	" Scunsor	" Scansor.
" 490	" Trichinrus	" Trichlurus.
" 490	" Hanmela	" Haumela.
" 494	" Table-fish	" Sable-fish.
" 495	" Pleuronectidæ	" Pleuronectidæ.
" 497	" Squalus	" Squalus.
" 497	" Plectognataes	" Plectognathes.
" 498	" Unibranchapeture	" Unibranchaperture.
" 505	" Acinia	" Actinia.
" 505	" Seriau	" Serpula.
" 508	" Hymenoptera (the second on the page,)	Lepidoptera.
" 509	" Corcidæ	" Coreidæ.
" 510	" Pulicidæ (Gnat)	" Culicidæ.
" 510	" Aelenga	" Agelena.
" 511	" Galasimms	" Gelasimus.
" 513	" Crocodilus	" Crocodilus.
" 514	" Ctoales	" Calotes.
" 516	" Iomalopsis	" Homalopsis.
" 518	to Franklin	add, et Sykes.
" 518	for Sykes	read Cuvier.
" 519	" Cristatellus	" Cristatellus.
" 520	" Vieillot	" Vieillot.
" 520	" Milvus	" Milvus.
" 520	" Gooinda	" Govinda.
" 521	" Alvus	" Calvus.
" 521	to Large Horned owl	add, or,
" 522	for Sornium	read Synium.
" 531	" Pardix	" Perdix.
" 537	" Saphire	" Sapphire.

The running title on page 489-495 ought to have Fish instead of Mammals.

Pages 461-542 were printed off while the Author was absent from the press; and several other errors of less consequence occur, especially in the Anglicized Burman names; but they can be corrected by the rules on pages 639-641.

*The following should have been inserted after the first paragraph on page 472.

The first public notice of this people that I can find on record is from the pen of a government officer in 1826. He observes: "A race of people termed by the Burmans Chalome and Paso are to be found scattered throughout the Mergui Archipelago. But their dread of Malayan and other Pirates has compelled those poor creatures to adopt an unsettled mode of life. During the N. E. monsoon they are obliged to remove from the vicinity of those Islands which are most frequented to escape being carried off as slaves by Siamese, Burmans, and Malays, who then visit them in quest of the valuable commodities they afford. They appear to be a harmless, and from necessity, an industrious race."



